WOOD WORKING digest

JUNE 1952

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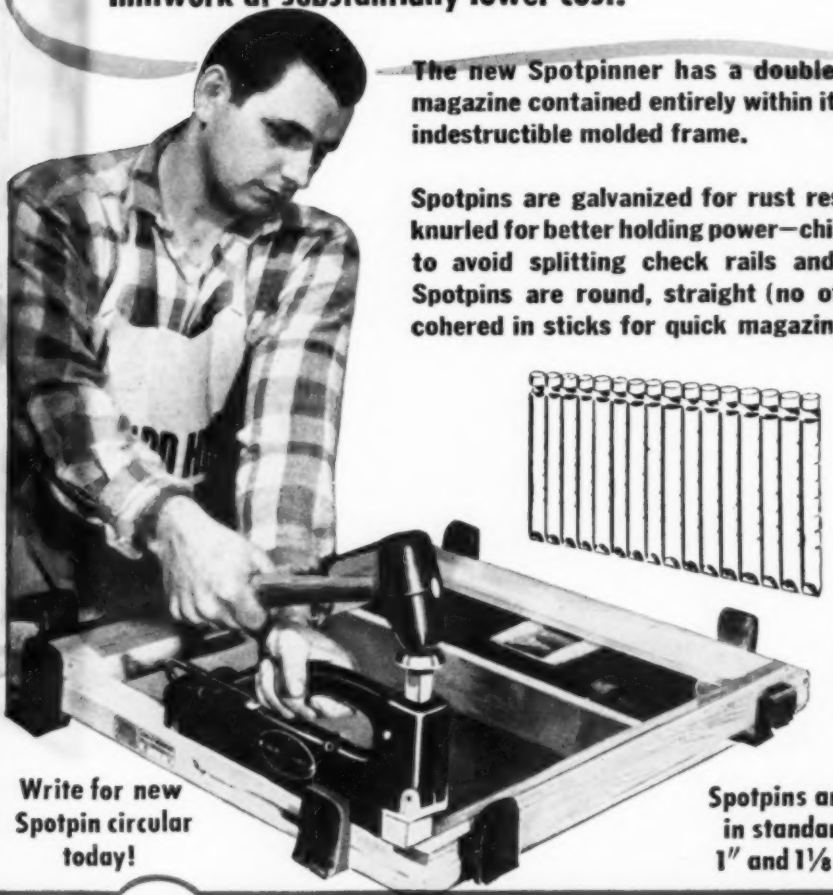

The new Spotpinner has a double capacity magazine contained entirely within its virtually indestructible molded frame.

Spotpins are galvanized for rust resistance—knurled for better holding power—chiselpointed to avoid splitting check rails and muntins. Spotpins are round, straight (no offset) and cohered in sticks for quick magazine loading.

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Spotpins are made in standard 7/8", 1" and 1 1/8" sizes.

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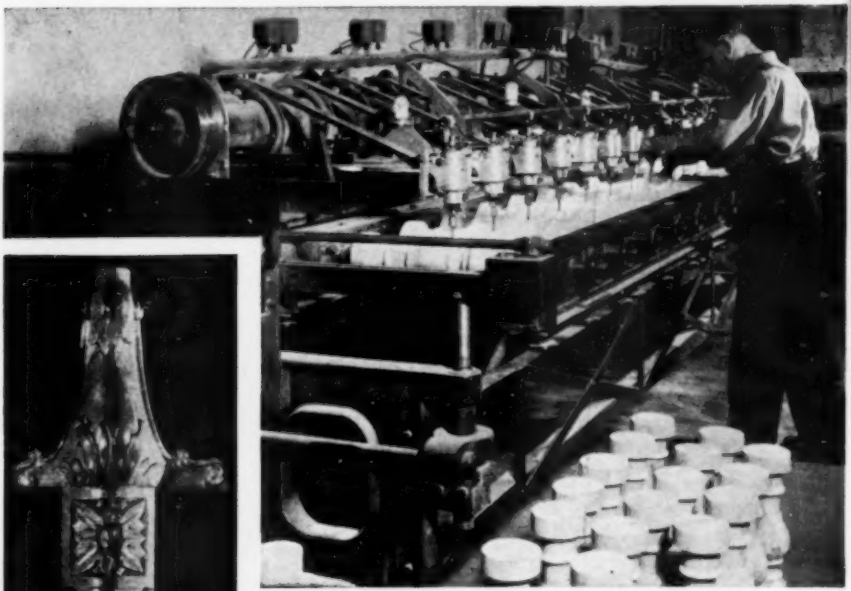
"OLIVER" MULTIPLE SPINDLE CARVING MACHINES

give you beautiful carvings, accurately cut . . . half rights and half lefts, if desired



It takes a good man to tell the original from the duplicate carved on the "Oliver." The low unit cost tells why leading furniture plants operate from one to nine of these machines for flat back, round and odd shapes. Table remains stationary while the spindles cut carvings up to 54 inches long without resetting. Rounded stock is turned simultaneously for uniform accuracy. Reverse cutting attachment enables you to use one pattern to carve both right and left hand work. The constant, powerful drive of the spindles makes heavy cuts at top speed. Easy to operate. Made in sizes of 4 to 32 spindles. Write for Bulletin 308.

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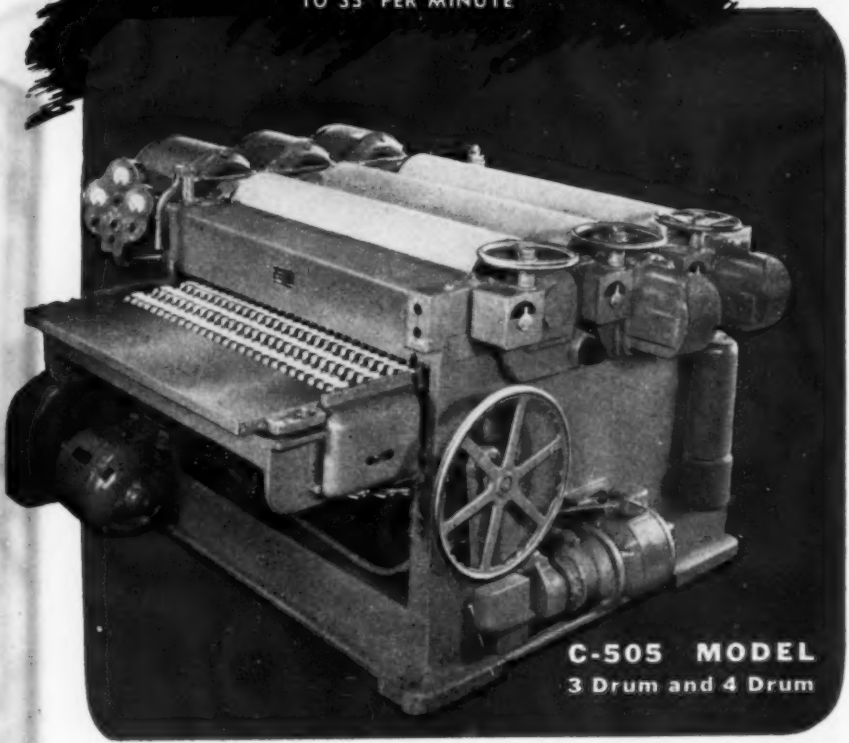
WITH SELF-OSCILLATING DRUMS AND VARIABLE SPEED DRIVE, 12' TO 35' PER MINUTE



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Band Saws 14", 20", 36" models
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Also send for Catalog AB-51 . . . use the coupon

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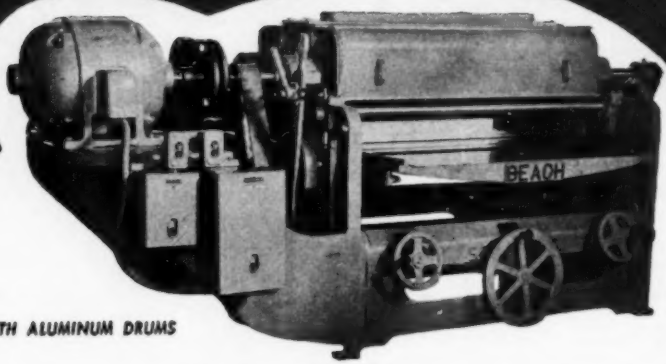
BEACH

TWO DRUM SANDER



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This new model BEACH SANDER combines many quality features and is adaptable to all types of drum sanding. Its simplicity of design cuts upkeep expense. Aluminum drums help give a fine finish.

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Wood Working digest

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JUNE, 1952 — OUR FIFTY-FOURTH YEAR

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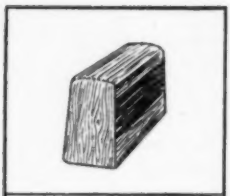

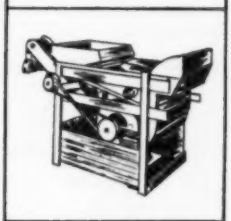

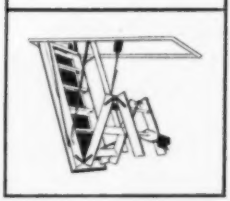

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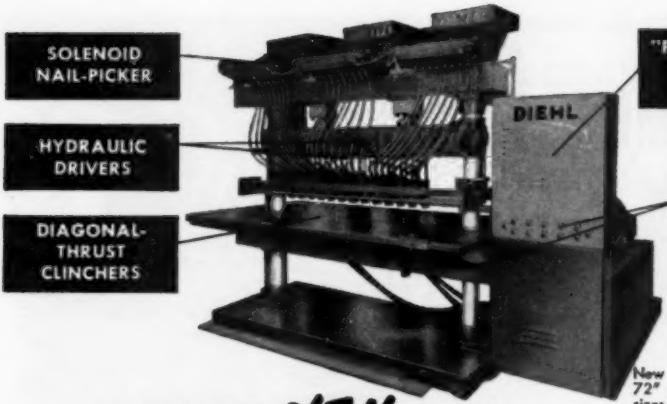

New Diehl HYDRONIC NAILER 72" model. Also available in sizes 40", 48", and 60". Open and closed back design.

DIEHL NEW Hydronic® NAILER

Up to 24 nails—10 patterns ● Up to 60 strokes per minute

Electronically controlled ● Hydraulically powered

Diehl now offers an entirely new idea in nailing machines, precision-designed to step up production and cut costs in your plant.

"Push-button" electronic master-control panel on the new Diehl HYDRONIC NAILER directs high-speed solenoids for positive, split-second picking of nails from feeders to chucks—push-buttons also adjust work table.

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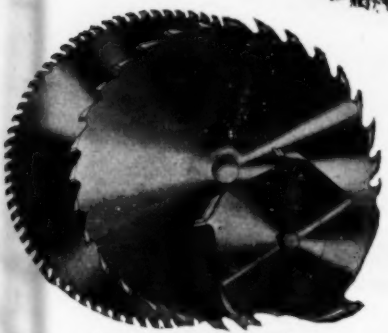

. . . . when you use

VICTORY CARBIDE TIPPED SAWS

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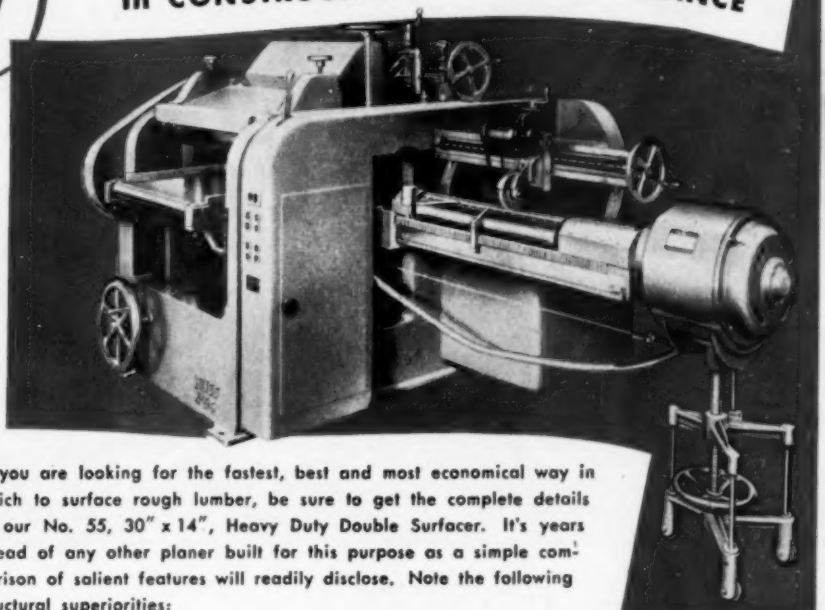
for DOUBLE SURFACING ROUGH LUMBER the BUSS No. 55 is YEARS AHEAD in CONSTRUCTION and PERFORMANCE



If you are looking for the fastest, best and most economical way in which to surface rough lumber, be sure to get the complete details of our No. 55, 30" x 14", Heavy Duty Double Surfacer. It's years ahead of any other planer built for this purpose as a simple comparison of salient features will readily disclose. Note the following structural superiorities:

1. Variable feed — from 30 to 175 ft. per minute. 2. Chromium plated beds and bars — for longer wear. 3 Heavy built-in grinders and jointers. 4. Anti-friction ball and roller bearings throughout. 5. Sectional feed roll and chipbreaker. 6. Large diameter cutterheads with high-speed TUNGSTEN knives for longer wear and smoother finish. 7. Completely motorized with push-button control. 8. Shearing Bar to prevent damage from loose knots. 9. ONE-SHOT lubrication for smooth running and insurance against neglected parts. Write for complete description. Ask for bulletin 55.

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SINCE 1862
MACHINE WORKS

PLANER SPECIALISTS EXCLUSIVELY

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HOLLAND, MICHIGAN

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KIRK AND BLUM
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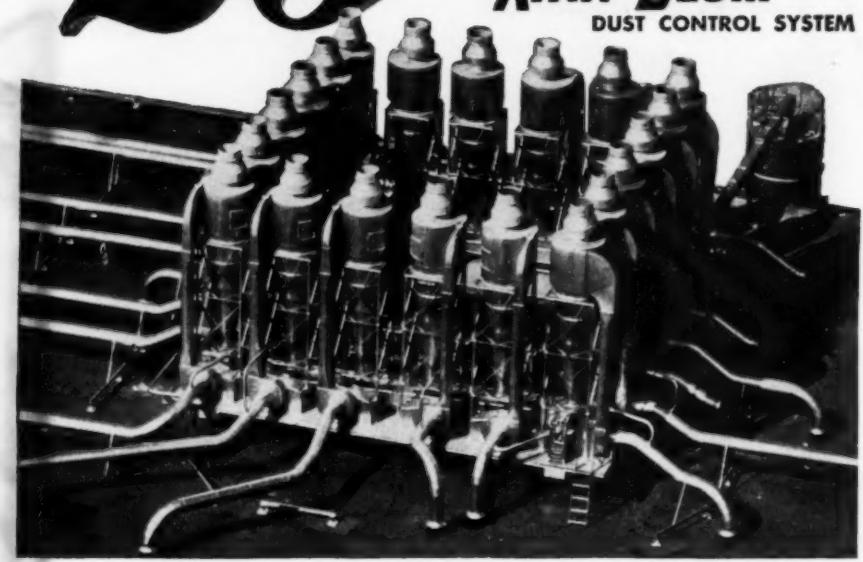

removes 99.5% of dust at FORMICA

A good indication of the efficiency of KIRK & BLUM Dust Control Systems on dust particles of any size is given by a recent installation.

At The Formica Company, particle size is in the small, 100 micron and under range, with 33% of the load under 60 microns. The KIRK & BLUM system installed and illustrated here, serves over 150 machining and micro-sanding operations. The efficiency of the entire system is 99.5%!

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"Whitney equipment . . . in continuous operation . . . . . maintenance cost extremely low"

TEMPLE-STUART COMPANY

TESCO

Dinette Suites & Chairs

April 11, 1952

Mr. K. O. Brown, Sales Manager
Baxter D. Whitney & Son, Inc.
Winchendon, Massachusetts

Dear Mr. Brown:

Our Whitney equipment, the #97 Double Surfacer and the #393 Automatic Shaper have been in continuous operation since they were installed, turning out exceptional work while substantially reducing the amount of our sanding operations. We have had no trouble with either machine, and our maintenance cost has been extremely low.

The #97 Double Surfacer handles with ease and accuracy our panel work, glued-up stock, chair seats, table tops and our general run of planing.

Our Whitney Automatic Shaper is tooled up for many jobs, both long and short runs. It produces smooth, dependable work and has increased the output of our shaping department tremendously. The ease with which we can change forms permits us to convert from one job to another with a minimum of down time.

We are pleased with the performance of our several WHITNEY machines and the high quality and quantity of work they produce.

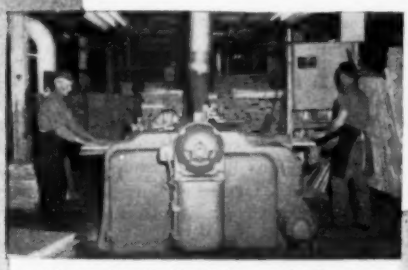
Yours very truly,

TEMPLE-STUART COMPANY

B. F. Stuart Jr.

B. F. Stuart, Jr.
General Manager

The Temple-Stuart Co., well known makers of quality dinette suites and chairs, depend on Whitney Planers and Shapers to maintain the high quality of their product and at the same time to get out large production. Investigate Whitney equipment for quality production at lowest cost. Send today for No. 97 Double Planer and Automatic Shaper bulletins.



Whitney #97 Double Surfacer at the Temple-Stuart Co. plant, Baldwinville, Mass., producing quality surfacing at fast feeds.

Whitney #393 Automatic Shaper turning out chair spindles. Spindle cuts continuously — shapes 3 pieces at a time.

Our 115th Year

WHITNEY

BAXTER D. WHITNEY & SON, Inc.

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WINCHENDON, MASSACHUSETTS, U. S. A.

Big-scale bonding benefits for small-scale users

from URAC® 185 *Resin Adhesive*

URAC 185, American Cyanamid Company's two-component resin adhesive widely used by larger manufacturers of fine wood products, is now available in small containers throughout the country. Through a nationwide network of Roddiscraft Warehouses, woodworkers whose volume does not warrant purchasing adhesive by the drumload may now obtain conveniently packaged URAC 185 in pint, quart, gallon and 5-gallon containers.

Roddiscraft containers include the two components of the adhesive as a unit. The top section contains the correct amount of powdered hardener to combine with the liquid resin in the lower section, and the user may mix the adhesive all at once, or in any similarly proportionate quantity. Detailed instructions for the many uses of URAC 185 in the woodworking industry are included with each container.

Decorative laminate users, furniture repairers and manufacturers, carpenters, contractors and other specialists in woodworking agree that URAC 185 means really strong bonds which set quickly at room temperature and are completely dependable. A craze-resistant, gap-filling bonding agent, it provides excellent bonds in thickness up to 0.020 inches for plastics, hardboards, plywood and wood structures. A URAC 185 bond is actually stronger than the wood fibers and resists deterioration from moisture.

A fine product which benefits from this fine adhesive is the famous Seth Thomas clock. Before using URAC 185, thirty bending forms were required to make wood clock cases. The adhesive then used required four hours for curing and the thirty bending forms were necessary to maintain a continuous cycle operation.

With URAC 185, cured with high frequency heat, the time cycle is approximately 20 seconds and only *one* bending form is necessary. In addition, because of the simplicity of URAC's application, valuable plant space is saved and labor costs are reduced.

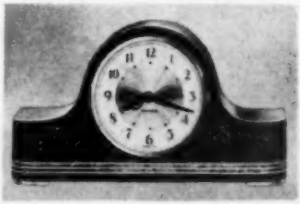
While accuracy of time is the important factor in a timepiece, beauty and fine workmanship are equally important to the General Time Corporation, makers of Seth Thomas clocks. URAC 185 makes a definite contribution to their fine craftsmanship.

The Eero Saarinen-designed chair, produced by Knoll Associates Inc., is another example of the excellent bonding jobs made possible by URAC 185. The one-piece leg-arm is comprised of thirteen thin layers of birch glued together with URAC 185. The unit is then molded into its final shape.

The Quality Maple Block Company, Kingston, New York, makes fine chopping blocks glued with URAC 185. These blocks must withstand the shocks of frequent chopping and pounding without loosening of the individual layers of wood. URAC 185 makes this possible.

URAC 185 may be spread with a knife, spatula or brush, and the craze-resistance of this product permits the use of ordinary hand-operated C-clamps.

The advantages of URAC 185, utilized so effectively by the above manufacturers, can now be employed to equal advantage in lesser quantities by other manufacturers. From its headquarters in Marshfield, Wisconsin, and its conveniently located warehouses, Roddiscraft assures quick delivery of URAC 185 Resin Adhesive to meet individual requirements.



URAC 185 combines with rare woods to produce the cases for the famous Seth Thomas clocks.

Knoll Associates employ URAC 185 because it provides durable, craze-resistant bonds.

Built up with URAC 185, this chopping block will withstand tough treatment.

URAC 185 is available from any of these Roddiscraft warehouses:

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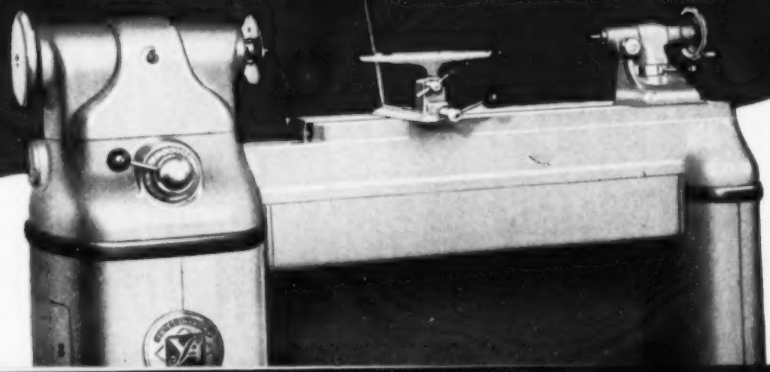
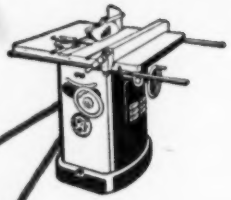
J-LINE

JUNIOR TYPE

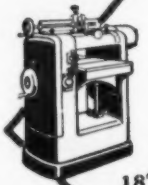
WOODWORKING MACHINES



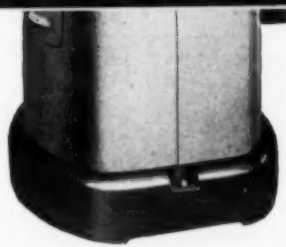


J-120
20" Band Saw

J-170
12" Lathe



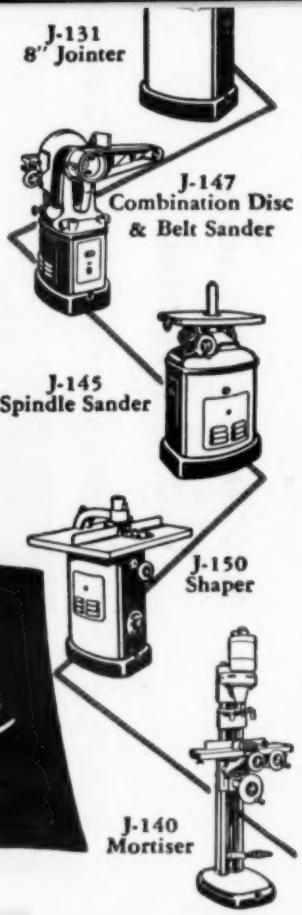
J-180
18"x6" Surfacer



J-170 12" LATHE

- **COMPLETELY EQUIPPED READY TO INSTALL**
- **STURDILY BUILT**
- **EASY TO OPERATE AND MAINTAIN**

Whether you are equipping an industrial arts department or buying additional woodworking machines for your light industrial plant . . . look to Yates-American J-LINE! The machines in this junior type family are modern, rugged, accurate, efficient. . .with a plus value on **safety design!** Write for information on this complete line of high quality woodworking machines . . . "the best that money will buy!"



Yates-American

BELOIT, WISCONSIN

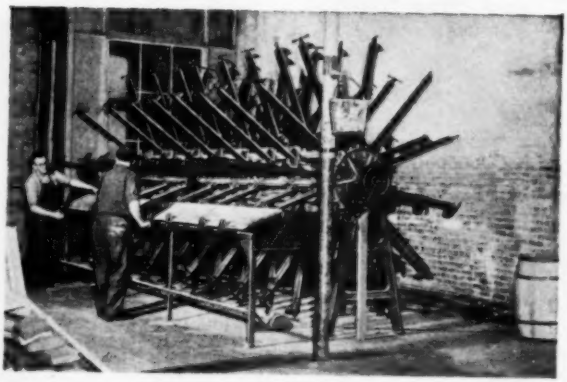
BRANCH OFFICES: CHICAGO, ILLINOIS; HIGH POINT, NORTH CAROLINA; MEMPHIS, TENNESSEE; PORTLAND, OREGON.

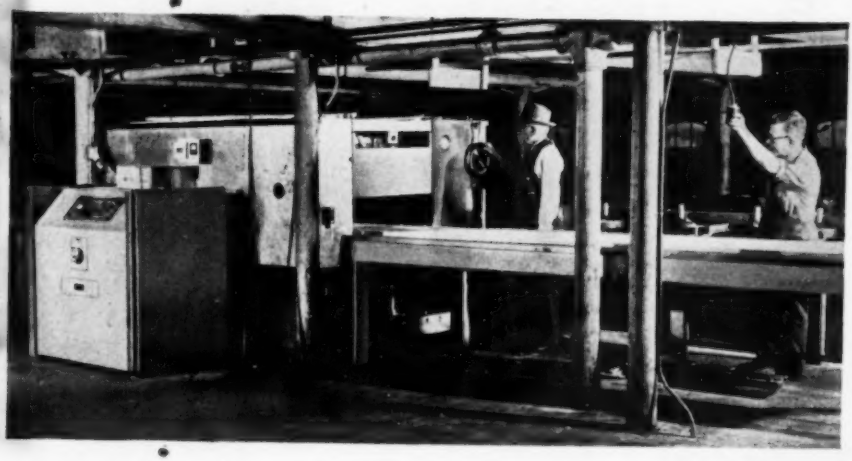
YOU CAN BE SURE...IF IT'S

Westinghouse

Before

Two men worked 8 hours to turn out 120 soft pine spinning creel boards. Planing and finishing were delayed 24 hours. Gluing maple and birch press rolls also took 2 full-time men. Rejects were high.





After

Now, using a Westinghouse 10 KW RF Generator in the installation shown here, 2 men working only *part-time* do both gluing operations. Planing and finishing are done immediately after gluing. There are virtually no rejects at all.

. . . . THE *Before* AND *After* STORY

OF A $13,550.00 YEARLY SAVING!

For Saco-Lowell, manufacturer of fine textile machinery, the ancient glue wheel and hand clamps hardly approached the production-output and product-quality they desired. What finally led to annual savings of over $13,550? Westinghouse Dielectric Heating!

Now with RF Heating, gluing spinning creel boards and press rolls takes less than half the manpower, saves over 40,000 board-feet of lumber every year by elimination of rejects and salvage of formerly waste material, floor space is cut in half.

The annual savings of over $13,550 from labor and lumber more than paid for the installation in less than one year. And this does not include the added savings from production increases, less floor space, and improved quality!

Find out *today* how *your* plant can increase production and cut costs. Call your local Westinghouse representative for a free copy of our new booklet, *"RF Heating for the Woodworking Industry."* Or write Westinghouse Electric Corporation, Dept. W-21, 2519 Wilkens Avenue, Baltimore 3, Maryland.

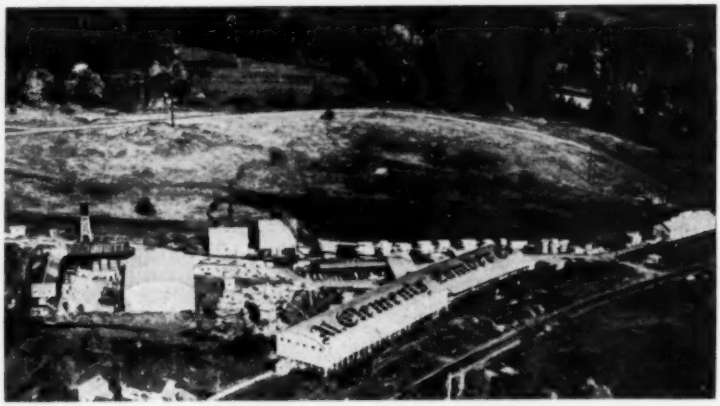
Westinghouse

RF HEATING

J-02231

Clements for Clears

DOUGLAS FIR



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Millwork Blanks . . . *. . . Heavy Clears*

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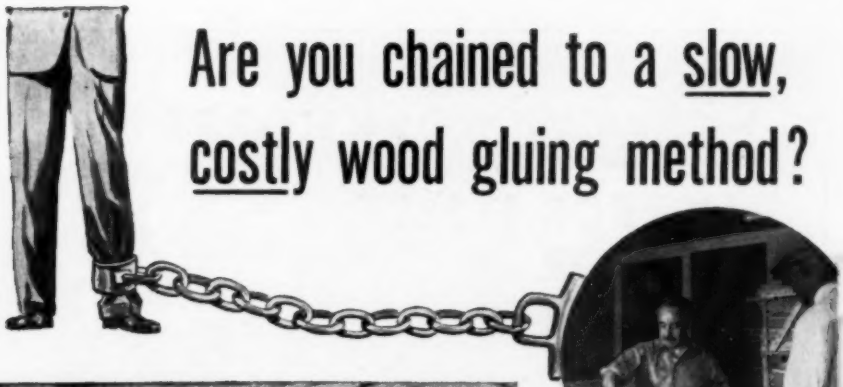
Are you chained to a slow, costly wood gluing method?



Thermatron

HIGH FREQUENCY GENERATORS AND EQUIPMENT

. . . For Permanent Wood Bonding in a Matter of Seconds!

Seen in the jig is an entire cabinet assembly to be glue-set electronically by THERMATRON in only 30 seconds. The bond is stronger than the wood itself by actual test! Hidden in the background is the 3 KW generator which masterminds this job.

*T. M. Reg. U. S. Pat. Off.

The saving to you in time, labor, floor space and expensive veneers is immeasurable . . . And the bonds produced are stronger than the wood itself. Costly clamps and clamping time are eliminated, and there are far less rejects.

THERMATRON supplies the complete installation, including generators and jigs, under one contract and one responsibility. The immediate production savings THERMATRON brings you are often more than the initial installation cost.

Write us today for complete details about your bonding problem . . . We'll be glad to offer guidance without obligation. And ask us for our instructive bulletin No. WD-15

HIGH FREQUENCY GENERATORS AND EQUIPMENT FOR ELECTRONIC GLUE DRYING • BENDING • EDGE GLUING • VENEER BONDING

Standard stock generators available from 500 Watt to 30 KW output, operating on 110 or 220 volt lines. Larger size generators up to 100 KW can be supplied for larger requirements.

Thermatron® DIVISION

RADIO RECEPTOR COMPANY, INC.

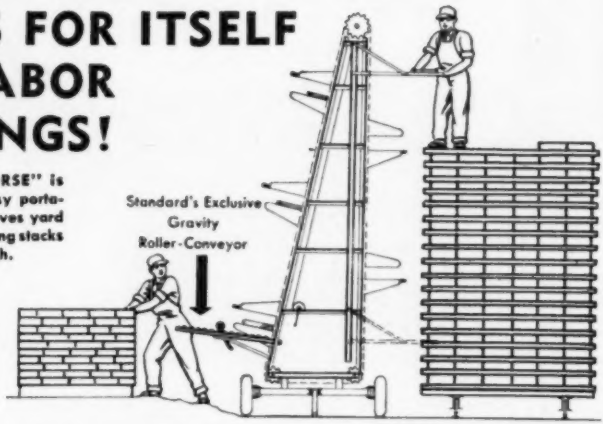
Since 1922 in Radio and Electronics

Sales Dept.: 251 W. 19th St., New York 11, N. Y. • Factory: 84 N. 9th St., Brooklyn 11, N. Y.

THE *Standard* WORKHORSE

PAYS FOR ITSELF IN LABOR SAVINGS!

The "WORKHORSE" is designed for easy portability and conserves yard space by permitting stacks up to 22 feet high.



• The gasoline or electric powered "WORKHORSE"—with its movable feed and take-off beds—makes yard or kiln stacking an easy two-man operation. Yes, it actually pays for itself in *labor savings* . . . it reduces labor turnover, because it makes lumber handling easy, increases production, eliminates labor fatigue, and cuts labor costs.

Standard's exclusive gravity roller-conveyor which automatically feeds the lumber into the jaws of the machine, gives you the quickest lumber handling possible! However, for yards where straight stacking (as pictured) is the only requirement *the "WORKHORSE" is available without the gravity conveyor.*

Manufacturers of Internal Fan Kilns

Write for Illustrated Standard Catalog

STANDARD
Engineers and Manufacturers Since 1907
DRY KILN COMPANY

P. O. BOX 5708 • INDIANAPOLIS, INDIANA

DoALL *Certified* SAW BANDS

SET to Cut Faster and Longer

The SET of DoALL saw band teeth is *Certified* uniform to a tolerance of plus or minus .0015", with symmetry of set held within .0005".

Checking accuracy of saw set with an optical comparator in DoALL Saw Band Inspection Laboratory.

DoALL's "Strip-out" metal saw band box is resistant to moisture and damage in shipment and storage.

SET of saw band teeth is defined as: "the amount of displacement given each tooth to create side clearance for the back of the band when cutting through a material".

The set of saw band teeth must be held within extremely close tolerances to give maximum cutting speed and saw band life. Among the 83 separate quality control inspections given DoALL Saw Bands, several are devoted exclusively to checking the accuracy of saw set. Failure to meet tolerances means the band is rejected. Exacting inspections such as this at every step in DoALL Saw Band manufacture assure you of highest possible quality.

For best performance from any make of vertical or horizontal band saw it pays to buy DoALL saw bands. Literature free on request.

SB-115

The DoALL Company
254 N. LAUREL AVE.
DES PLAINES, ILLINOIS, U.S.A.

DoALL

38 Sales Service Stores in North America.

Acme Steel Strapping Insures S.A. *(Safe Arrival)*

ACME STEEL PRODUCTS COMPANY
ACME STEEL COMPANY
2843 ARCHER AVE., CHICAGO 8, ILL.

ACME STEEL

Strapping lumber into large packages for modern mechanized handling can save up to 70% on labor alone. Here you see one man moving 40 bundles of lath strapped together into one unit. Steel strapping also makes for quicker tallying, less damage and pilfering, less danger of injury to your employees.

If You Want To Cut Costs

YOU CAN ADD THIS UP **fast**

DRIVES FASTER—*SAVES ASSEMBLY TIME*
+ HOLDS TIGHTER—*FEWER SCREWS NEEDED*
+ SAFER TO USE—*FEWER REJECTS*
+ DRIVES STRAIGHT—*SAVES RESTARTING SCREW*
+ FEWER OPERATIONS—*SAVES TIME*

IT ALL ADDS UP TO

Important Savings for you!

You can identify TWIN-fast by its relieved shank and twin thread

Get all the facts on this new screw that fastens wood to wood, metal to wood, or plastic to wood. It has four new basic improvements.

1. Relieved shank diameter
2. Parallel twin threads
3. Cylindrical construction
4. Single centered point

Can be furnished in either Slotted or Phillips Recessed Heads.

TWIN-fast

Reg. U. S. Pat. Off.
2,514,991 – 2,214,940 – 2,273,879
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The Faster Driving... Cost Cutting Fastener

WRITE TO ANY OF THE FIRMS LISTED TO LEARN HOW THIS REVOLUTIONARY NEW SCREW CAN SAVE YOU MONEY!

American Screw Company
Willimantic, Conn.

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Keene, New Hampshire

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National Screw & Mfg. Co.
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Stronghold Pacific Corp.
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Stronghold Screw Products, Inc.
Chicago, Ill.

Southington Hardware Mfg. Co.
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Townsend Company
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Please send copy of the new TWIN-fast bulletin.

Name .....

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ACCURATE PRECISION GRINDING

WITH DEPENDABLE'S LOW-COST NO. 106-A

Illustrated with side-head grinding attachment, capacity up to 12" in diameter.

NEW PRECISION GAUGE . . . Equipped with Dependable's G-11 precision gauge. So easy to operate that even an inexperienced operator gets a perfect grind. Set-up takes only a few seconds. Because of accuracy, less knife surface is ground away on expensive knives. Saves you up to 50% of knife replacement costs.

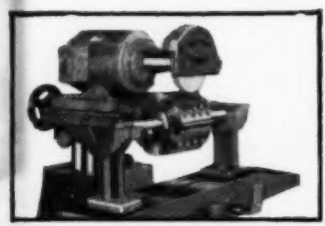
BALL-BEARING TABLE . . . Made to machine tool standards for ease of operation. 200 lb. table travels 20 inches and can be controlled by your little finger through a handwheel.

EASY ADJUSTMENTS . . . All adjustments reached from front, while grinding.

RUGGED CONSTRUCTION . . . Extra heavy castings eliminate vibration and give smooth operation.

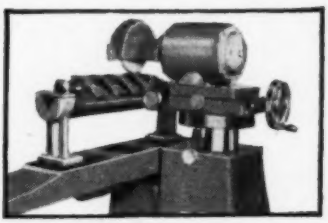
FULL UNIVERSAL . . . Motor base assembly turret mounted to give 360 degree adjustment for straight or hollow grind. Full universal side head stand for grinding knives with any angle.

LOW IN PRICE . . . You'll be pleasantly surprised at the low cost of the Dependable No. 106-A.



MOULDER HEAD ATTACHMENT
For all types of moulder and profiler heads of slip-on type; Up to 12" in diameter and 15" long.

Write for Free Copy of Bulletin C-7 and name of your nearest dealer.



STRAIGHT KNIFE ATTACHMENT
For grinding thick and thin knives up to 20 inches long. Knife plate grooved for quick set-ups.

DEPENDABLE QUALITY · SERVICE

Dependable MACHINE COMPANY

2320 High Point Road · Greensboro, N. C. · U. S. A.

MOULDERS · KNIFE GRINDERS · HEAD GRINDERS · KNIFE JOINTERS · KNIFE BALANCERS · RIP SAWS

"I see the spec calls for MIL A-397A. Let's use Penacolite Adhesive G-1124..."

"Sure... it got us out of trouble when we built those PT boats during the war."

PENACOLITE® RESORCINOL ADHESIVES

form permanent bonds... as strong as the woods they join!

● Penacolite Adhesives are resorcinol-base resins, the only known neutral waterproof adhesives capable of curing at *room temperature*. These durable thermo-setting resins attain their cured state through an irreversible chemical action . . . they cannot be softened by further heating.

Penacolite Resorcinol Adhesive bonds remain strong through high humidity and temperature variations from -40°C. up to charring heat . . . through all weather conditions under which wood itself is serviceable. They are not affected by salt or fresh water, by oils, greases, most solvents and acids. They will not deteriorate with age. And, due to their neutrality, Penacolite Resorcinol Adhesives are not injurious to cellulosic fibres.

There's a Penacolite Adhesive for practically every bonding job. And remember: our technical service is always on call. Let us analyze your bonding problem and recommend the Penacolite Adhesive best suited for your particular job. Just contact the nearest Koppers Division office.

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Do you have our new bulletins which tell how to use Penacolite Adhesives in the bonding of white oak for ship and boat use? They're yours for the asking.

KOPPERS

KOPPERS COMPANY, INC.
Chemical Division, Dept. WWD-62, Koppers Building, Pittsburgh 19, Pa.

PENACOLITE RESORCINOL ADHESIVES

The original waterproof, room-temperature setting adhesives

"HORRIBLE EXAMPLES?

. . . these have all been corrected"

WE asked a well known manufacturer of fine furniture if he had any "horrible examples" of what wintertime dry air did to his wood. His reply:

"We are sorry to tell you that we do not have any HORRIBLE EXAMPLES in the way of warped or cracked pieces of furniture in our plant. Before we humidified our entire plant, we did have a lot of these cases — too many for comfort. This has all been corrected through humidification with your Armstrong Steam Humidifiers.

". . . wood takes on a lot of moisture during the summer, and when the windows are closed during the fall and winter heating season, the moisture is promptly dried out and creates the cracking and warpage to which you refer. We are sure that if you contact an *unhumidified* plant in late October or early November, you will find plenty of horrible examples."

ARMSTRONG MACHINE WORKS
863 Maple Street, Three Rivers, Mich.

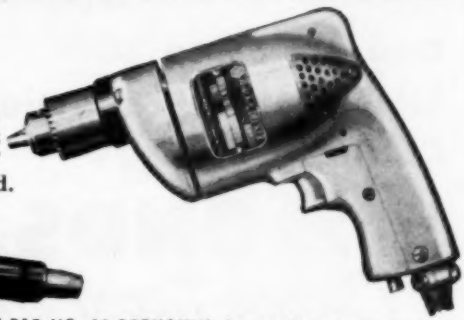
Complete details on Armstrong Steam Humidifiers are in Bulletin 1772, free on request, or, better yet call your Armstrong Representative and start saving right away.

ARMSTRONG *Steam* HUMIDIFIER

for FASTER ASSEMBLY
at LOWER COST
with FEWER REJECTS...

Switch to BLACK & DECKER POWER!

NEW B&D ¼" HEAVY-DUTY HOLGUN* has *25% more power*, can't be stalled at rated capacity! New handle shaped for plenty of finger room. Husky, high-quality parts make it really *heavy-duty*. Drills holes to ¼" diam. in steel, ½" diam. in hardwood.



NEW B&D NO. 12 SCRUGUN* has *50% more power!* Capacity increased from No. 10 to No. 12 wood screws. Also drives machine screws, nuts and self-tapping screws up to ¼" diameter. Same new handle as HOLGUN*. Positive and adjustable clutch, 90° angle head models available.

*Trade Mark Reg. U. S. Pat. Off.

INDUSTRY'S MOST FAMOUS ASSEMBLY TEAM is finer than ever . . . to turn out more work, at lower cost, with less spoilage! See your nearby B&D Distributor for a demonstration. Write for free catalog to THE BLACK & DECKER MFG. CO., 667 Pennsylvania Ave., Towson 4, Maryland.

LEADING DISTRIBUTORS EVERYWHERE SELL

BD Black & Decker PORTABLE ELECTRIC TOOLS

DRILLS · BENCH GRINDERS · SCREW DRIVERS · GLUE POTS

and get up to 300 TIMES more Production Cutting with...

SIMONDS *Carbide-Tipped* SAWS

Carbide-Tipping "Simonds' Way" gives you a saw with teeth that fight off wear, that give record-breaking production hours between sharpenings, that leave surfaces so smooth they require little or no further finishing.

In a Simonds Carbide-Tipped Saw you get extra quality and extra value . . . special analysis alloy steel from Simonds' own mill, precision grinding and skillful tensioning, top-grade carbide tips brazed into place by Simonds special method . . . highly polished surface finish . . . perfect roundness, balance and tooth alignment. All these advantages add up to smoother, freer, straighter cutting and long, trouble-free service.

Standard-size saws are available from stock through your Industrial Supply Distributor. Call him today.

Send for Your FREE Copy
SIMONDS NEW
CARBIDE TIPPED SAW CATALOG

Just off the press, this new catalog includes complete listings, specifications and recommendations covering Simonds complete line of Carbide Tipped Wood Cutting Saws. Address the nearest Simonds Factory Branch.

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SAW AND STEEL CO.

Factory Branches in Boston, Chicago, San Francisco and Portland, Ore. Canadian Factory in Montreal, Que.

Any operator can make and maintain these precision knives to uniformly close tolerances with this simplified

REDCO

PROFILE GRINDER

HERE'S a fact for every furniture and wood working plant that's looking for an "old time", highly skilled, tool grinder.

Stop looking and get a REDCO Profile Grinder!

Using a REDCO Profile Grinder, any operator, after a few days training at REDCO, can accurately and uniformly make and sharpen high speed steel and carbide tipped profile cutters for shapers, molders and similar tools. And remember, a regular, on-schedule, sharpening of these tools *in your own plant*, will cut time and material waste . . . and boost production!

Attachments for sharpening REDCO carbide tipped saws, router bits and straight knife cutters can be supplied.

Get the complete story on the REDCO Profile Grinder. Write today for the free fact-full, REDCO bulletin.

The Best "Tip" of the Year!

CARBIDE TIP

NEW DESIGN SAW BLADE

TYPICAL PRICES

Diameter	Teeth	Price
12"	60	$149.50
14"	60	$153.50
16"	60	$157.50

World's most satisfactory blade for smooth splinter and chip free finished. Especially designed for trimming, mitering and cross cutting fancy veneered panels, ply woods, decorative laminates and solid woods.

Expenses are clipped when it's Big Four Carbide tipped.

BIG 4 SAFETY SAW BLADE

TYPICAL PRICES

Diameter	Teeth	Price
5⅞"	6	$14.40
8"	10	$18.60
10"	10	$24.30
12"	12	$31.00
14"	14	$34.20

Revolutionary in design, performance and PRICE. Anti-kickback features mean less operating effort; carbide tips give longer life. Blades for all sawing operations available 5⅞" to 16" diameters. For portable electric, hand- or chain-fed machines.

"Ask your local dealer—if he is unable to supply you, contact us directly."

Big 4 produces saw blades for every purpose, from school room manual training to large industrial projects.

BIG FOUR CARBIDE TOOL COMPANY

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For free comprehensive booklet write to: Big Four Carbide Tool Co., 5938 Carthage Avenue, Cincinnati 12, Ohio.

Comments from THE NATION'S CAPITAL

By Arnold Kruckman
Washington Correspondent

The Koje Island incident has stirred the people profoundly. The crass stupidity, and the almost incredible awkwardness of the blunders in the handling of the incident, have aroused an indignation which is bringing Congress a huge mail. These mountainous waves of feeling have dwarfed the generals who are the Pentagon. What Congress is getting reveals a sense of insecurity that passes even the indignation that came after the steel seizure. The incident will have a tremendous effect, fundamentally, far beyond the usual political implication.

No agency of government is so utterly unpopular as the Wage Stabilization Board! Literally tons of mail, telegrams, and other communications have poured upon Congress, and other parts of government, urging the instant abolition of this agency. You can scarcely go anywhere in Washington where there are business people, no matter from what part of the country they come, that you don't hear bitter complaints and urgent prayers for the elimination of what WSB represents. Again, it is doubtful whether the impact of unorganized sentiment will wipe it out.

There may be some consolation, if it can be gotten over to the business man, that the condition which makes possible the situation does not stem solely from the fact that this is an election year. It is the deep-seated disease that must be cured before we get back on the highway of American principles, and the sturdy courage and decency which used to be the keynote of Americanism.

Senate and House leaders plan, if possible, to adjourn Congress before the Republican National Convention opens July 1 in Chicago. It depends chiefly on what Congress is able to do by the middle of June.

The Defense Production Act extension—controls—will be highly controversial; and the Foreign Aid Bill, another high blood-pressure subject, are the most immediate problems. Thereafter comes the FEPC proposal, and various appropriations yet undetermined. And, remember, Truman has threatened to call Congress back in special session if it doesn't do what he wants.

Chairman of WSB told the House Labor Committee he would end wage controls where eight or less workers are employed. There will be some exceptions not yet defined; nor has the exact time been indicated.

U. S. Department of Labor reports there were decreases in March in prices of household furniture, lumber and wood products. There was a slight increase in prices of plywood. The lumber industry, early this year, with improved weather conditions in the Northwest, doubled the number of its employees.

Henry H. Fowler, NPA head, becomes DPA top with the resignation of Manly Fleischmann. This puts both agencies under control-hungry Commerce Secretary Sawyer. Lawrence W. Strattner, vice president, West Virginia Pulp and Paper Company, formerly Deputy Administrator, Chemical, Rubber and Forest Products Bureau, NPA, was appointed Assistant Administrator, succeeding Kenneth H. Klipstein. M. W. Smith, Jr., now Division Director of Forest Products in OPS, replaced Rufus I. Worrell. M. C. Walsh, is new Assistant Director of the Division.

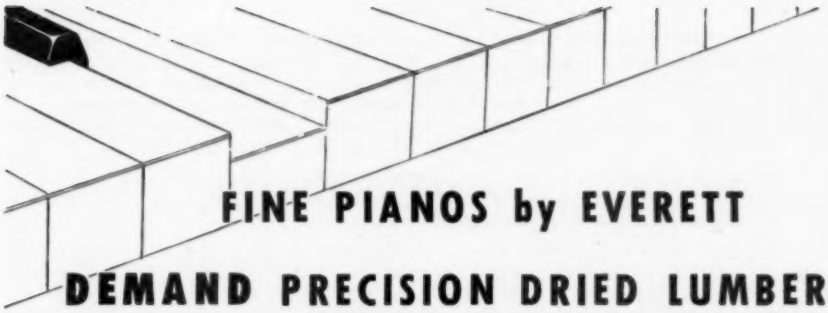
Fred W. Fraley, Cleveland, has been appointed Deputy Assistant Administrator of Forest Products Bureau, NPA. John C. Clay, who has specialized in woodworking, was appointed Director of Containers and Packaging Division, NPA.

The southern softwood industry proposes to establish ceilings for standard grades and sizes on an f.o.b. mill basis, with provisions for adding delivery costs for sales on a delivered basis, if OPS will agree. The proposed regulation would cover sawmills, planing mills and concentration yards selling southern yellow pine lumber anywhere in continental U.S. The proposed regulation would apply to about 24,000 producers cutting lumber valued at about a billion dollars annually, amounting to 26% of the total national output.

OPS issued dollars-and-cents ceilings for manufacturers of northeastern white pine lumber, as CPR 140, effective April 29. It supersedes GCPR. Ceilings are spelled out for square-edge lumber at the level of ceilings established by GCPR, January 26, 1951. Ceilings fixed for round-edge lumber are higher than under GCPR, and are designed to adjust a disparity between ceilings on round-edge and square-edge lumber.

The new regulation applies to more than 8,000 mills, mostly small, in six New England states and New York and Pennsylvania.

Eastern wood preserving industry told OPS they want a tailored regulation to cover forest products treated with wood preservatives at plants located in the eastern half of the U.S. and sold anywhere in the continental U.S. Regulation also would



FINE PIANOS by EVERETT

DEMAND PRECISION DRIED LUMBER

Everett Piano Company's new lumber storage facilities and automatically controlled Sipho-Fan dry kilns by Imrie

Imrie Sipho-Fan dry kilns have set the pace in precision drying of lumber for the past 20 years

OUR PURPOSE . . . TO SERVE YOU BETTER

SIMPLICITY ECONOMY

Imrie Dry Kiln Company

MICHIGAN TRUST BLDG.

GRAND RAPIDS 2, MICHIGAN

cover the treating services in the same area. Products would include bridge materials, poles, piling, lumber, railroad crossings, railroad ties and wood block floors. Treatment would include pressure and non-pressure processing with creosote and other preservatives, including incidental services such as yarding, framing, fabricating, incising, adzing and boring.

Receipts from national forests increased $13,721,552—36%—the first three-quarters of fiscal year 1952, over receipts for the same period a year ago.

At the three-quarter mark, ended March 31, national forest receipts totaled $51,013,683, compared with $37,292,130 a year ago. All receipts go into the Federal treasury. Twenty-five percent is returned to the states in which the national forests are situated, to be spent on public roads and schools.

A report by the Primary Forest Products Industries has been published by the NPA. Similar data on sawmills and round-wood concentration yards is also given. The 68-page report was prepared to provide NPA with a yardstick for estimating priorities and allocations for sustaining given levels of production in the timber industry. Copies may be obtained from the Lumber and Wood Products Division of NPA or the U.S. Forest Service, both addressed Washington 25, D.C.

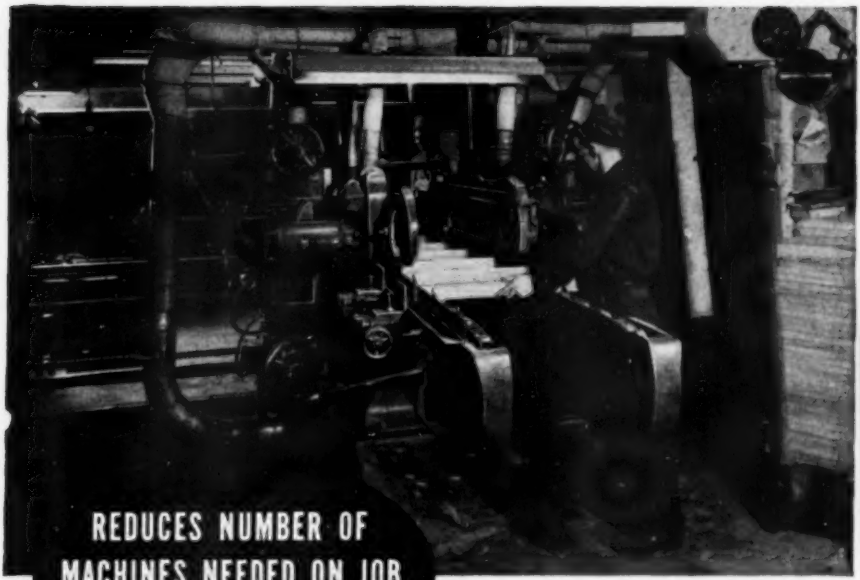
Mobile, demountable houses, product of Homebuilding Corporation, Sedalia, Missouri usually come in three bedroom units of 855 sq. ft. floor area, using frame and curtain wall construction. Floors, walls and interior partitions are laminated panels. The units would cost in quantity approximately $8,000 each.

Funds available for Federal agencies to aid in building homes will be increased by $4,590,000,000, to a gross total of more than $8 billion, when S-3066, introduced by Senator Maybank, Chairman of the senate Banking and Currency Committee, is enacted, which seems almost certain.

During April, wood and sawmill products were purchased by the various agencies of the Federal government to the amount of $2,793,400; wood manufacturers received orders totaling $4,273,000. This makes a grand total for the combined industry of $7,066,400. Army, Navy, Panama Canal Zone, General Services Administration, and Air Force were the chief purchasers. Items include wood pallets, lumber, furniture, high chairs, cargo box sets, tool cabinets, folding tables, dressers, mailing tables, target frames and ship planks.

Senate Small Business Committee, reporting on Administration of Public Law 721, charged that small business suffered heavy losses in filling Army and Navy contracts, due to maladministration by the Defense Department. The Committee asserted the Defense Department refused relief for heavy losses despite specific mandatory provisions in the law. The report cited incidents collectively totaling several million dollars. It warns smaller business to beware of doing business with Defense Department officials.

Federal regulation of lobbying was wiped out as unconstitutional by unanimous decision of the U.S. District Court.



REDUCES NUMBER OF MACHINES NEEDED ON JOB FROM 9 TO 3 . . .

. . . Greenlee Double-End Tenoner

"At the time we purchased this machine, we were running quite a large job which required three mitre saws, a double cut off saw and five shapers. Within one week after the GREENLEE Double-End Tenoner was put into operation, the machines necessary on this job were reduced to one mitre saw and one shaper.

"In addition to this saving, our Cabinet Room output jumped more than 20% due to more perfect fitting or precision machining and a much improved general appearance of product."

That's what Mr. H. L. Hubbell of H. L. Hubbell Manufacturing Company, Zeeland, Michigan says about the versatile GREENLEE Double-End Tenoner.

Here is just another example of the many important savings and production benefits a GREENLEE Double-End Tenoner makes possible . . . from the machine room on through the cabinet and finishing rooms.

For, as a "woodworking plant in itself", it literally reaches out after extra work. It steals job after job from single-purpose machines . . . draws into itself scores of different, difficult jobs . . . to bring about new efficiencies, welcome cost reductions and superior finished work.

Write today for Bulletin 545 with complete details. Greenlee Bros. & Co., 1866 Twentieth Ave., Rockford, Illinois, U.S.A.

MACHINERY & TOOLS

GREENLEE

GREENLEE WOODWORKING MACHINERY: MORTISERS • BORERS • SAWS • TENONERS • PLANERS • SHAPERS • MORTISING & BORING TOOLS

Court held the law contravened the due process clause of the fifth amendment of the Constitution. National Association of Manufacturers brought the suit against the government.

DPA Conservation Coordinating Committee has taken steps to permit more construction with materials now available. The 17 representatives of as many government agencies urged for attention the 1951 edition of "National Design Specifications for Stress-Grade Lumber and Its Fastenings." The committee urged government agencies, private architects, engineers and contractors be guided by its principles. An outstanding new feature of the revised edition is the inclusion of commercial stress-grades glued, laminated lumber. The book is available from the National Lumber Manufacturers Association, Washington, D.C.

House Small Business Committee told the Defense Department that preferential treatment to firms located in 40 labor surplus areas tends to exclude small businesses not located in the areas. Large companies with branch plants in labor surplus areas are using the advantage to obtain contracts at the expense of small firms not so favorably located. The committee emphasized corrective action is long overdue.

Agriculture Department predicts 1952 will be one of the poorest years for farmers since before World War II, by reason of higher costs and lower prices. Tariffs on wood screws will be the subject of a public hearing June 30 in Washington, D.C. Those who wish to appear or produce evidence should file in advance a request in writing with the Secretary, U.S. Tariff Commission, Washington 25, D. C.

Thirty-one RFC agency managers scattered around the country have been empowered to make business loans up to $50,000.

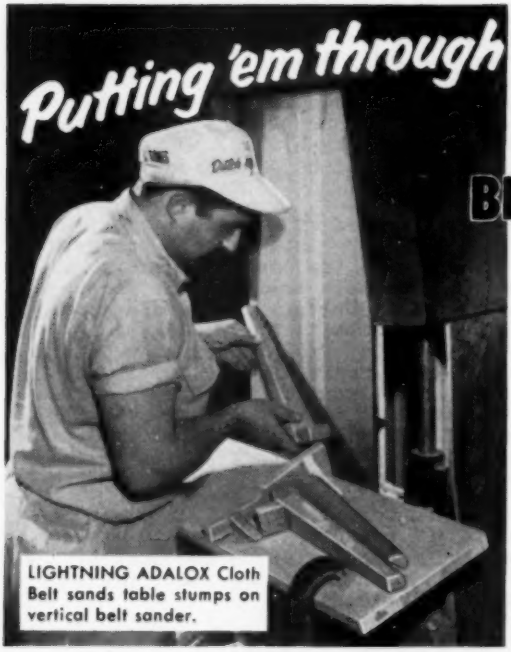
Republic of Indonesia has a half million U. S. dollars supplied by the Mutual Security Agency with which to buy furniture and woodworking machinery. Details will be supplied by the Ministry of Economic Affairs, Djakarta, Indonesia.

Mutual Security Agency gave Formosa, Indochina, the Philippines and Thailand $1,267,000, spent partly for lumber and sawmill products and lumber manufacture obtained chiefly from Canada, and some from the U. S. and its possessions.

The Netherlands has $250,000 U.S. funds, supplied by Mutual Security Agency, to buy lumber products in Canada, Latin America and the U.S.

Republic of China, Formosa, has Mutual Security Agency funds to buy Douglas fir in the U. S. for ship construction at Formosa. Lumber, sawmill products, and lumber manufactures, $75,000 worth, will be purchased in the U. S. and its possessions by the Formosa government with Mutual Security Agency funds.

France was given a Mutual Security credit of $110,000 to invest in U. S. softwood logs and sawmill products. F. Feltrinelli, via della Posta 8/10, Milan, Italy, has $6,300 of Mutual Security Funds to buy Douglas fir lumber.



LIGHTNING ADALOX Cloth Belt sands table stumps on vertical belt sander.

BEHR-MANNING ADALOX® ABRASIVE BELTS

▲ More pieces sanded per hour—more pieces finished per belt. That's the common story today in plants everywhere when faster-cutting, longer-lasting ADALOX sanding belts are on the job. These belts of aluminum oxide grain cut sharper and produce more uniform finishes because all grains are evenly spaced and placed accurately in their sharp-end-up position by the LIGHTNING® electro-coating process. And for extra durability, all grains are DURABONDED®—doubly anchored to the strong, flexible backing to stay in the same sharpest cutting position.

Whether your sanding needs are for belts or for some other coated abrasives form, there's a BEHR-MANNING product to do it better and faster. Let us prove it with a demonstration. Write Behr-Manning Corp., Troy, N. Y. For export: Norton Behr-Manning Overseas Inc., New Rochelle, N. Y. In Canada: Behr-Manning (Canada) Ltd., Brantford, Ont. Address Dept. WD-6.

BEHR-MANNING® CORPORATION
division of NORTON Company

▲ COATED ABRASIVES
▲ SHARPENING STONES
▲ PRESSURE-SENSITIVE TAPES

The Agriculture Ministry of Greece wants to buy a wood rabbeting machine with Mutual Security Agency funds. The Netherlands will buy lumber and sawmill products to a total value of $330,000 in Mutual Security funds. It wants Oregon pine clear, Oregon pine merchantable, and pitch pine from the U. S. Other items are listed for purchase in Canada and Latin America. Greece seeks railroad ties to be purchased with Mutual Security Agency Funds.

United Kingdom has been authorized by Mutual Security Agency to buy $3 million worth of lumber and sawmill products in the U. S., and $3 million worth of the same merchandise in Canada. No specifications are available in the U. S. American suppliers must make inquiries in the United Kingdom and arrange to get the full specifications and submit offers. Americans are advised to secure the MSA pamphlet "A Businessman's Guide to Trade with the United Kingdom." Copies may be had at any of the 42 field offices of the department of Commerce, or from the MSA Office of Small Business, 806 Connecticut Avenue, N.W., Washington 25, D. C. A Scotch firm with Mutual Security Agency funds, wants sawmill products. For information write to the address above and mention proposal No. 12.

A British furniture industry team visited this country as Mutual Security Agency guests. A report, subsequently issued in London for distribution within the furniture industry of the United Kingdom is 73 pages long, with 25 photographic plates on U. S. furniture manufacturing methods.

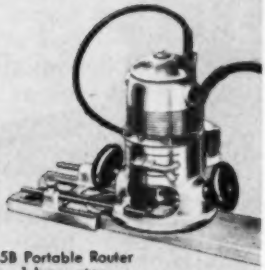
In five weeks the 16-member British team visited 38 American factories in Massachusetts, New York, Illinois, Michigan, Kentucky, North Carolina, Virginia and Maryland. The Britishers commented no one could have access to their factories as they had to ours.

In its recommendation to the British industry, the team asked management to define functions and responsibility clearly; to decentralize responsibility from top management down to the work bench; to recruit young, enthusiastic executives with the real intention of giving such men an opportunity, and to welcome competitors who want to see methods and techniques and production, because "a closed door keeps out more than it keeps in." The report described as "often absurd" the limitation imposed by the British industry's desire to keep production methods and techniques secret.

In one area, safety precautions in the furniture factory, the British were not at all sure the American system was ahead of theirs. "To British eyes the American wood-cutting machinery is much less adequately guarded and much of it would certainly not reach the safety standards embodied in the British Factory Acts."

One fire safety device, the sprinkler system, they found to be of much more widespread use in America than in Britain, and they called for a British government investigation into the high cost, lack of competition and delays in installation of sprinkler systems in England.

R8A Portable Router
½ h.p. motor



R5B Portable Router
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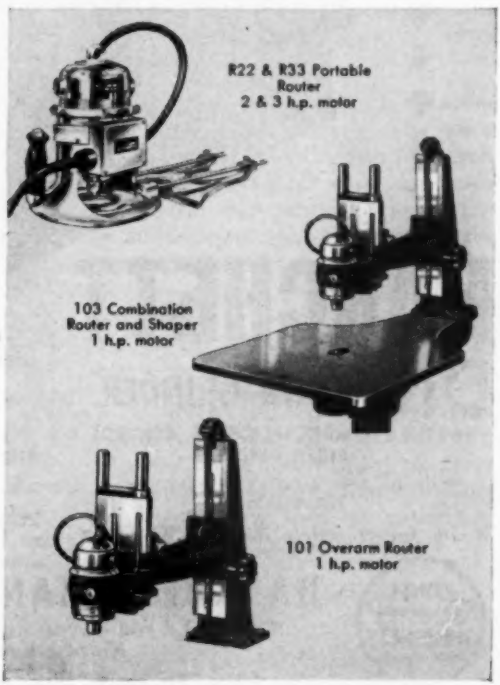
Whatever your routing need, there's a versatile Stanley Router to do the job faster . . . better . . . at lower cost. Their high speed motors produce fine, smooth finishes without sanding. Quality ball bearing construction assures continuous, trouble-free operation. Models are available in a particularly wide range of power ratings to meet limitless routing requirements.



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103 Combination Router and Shaper
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from new permanently-aligned Knife Bar

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Safeguarding ★ ★ ★ AMERICAN INDUSTRY

We often stumble onto something we should know all about, but in reality know so little! This happened to me recently. I do not know what can be done to correct the situation, but correct it we must if American industry is to be safeguarded and sustained.

Recently I attended the Seventh Mississippi Valley World Trade Conference at New Orleans. I was there as the official representative of Hitchcock's "Revista Industrial," the leading Latin American industrial publication coming from the United States.

Several problems—your problems more than you may realize—were impartially discussed during the conference. Here is one — How can we make imports match exports? If we do not, how long can we stay in business? It is just this serious in the opinion of many people.

We have been giving financial aid to foreign countries, putting them back in business after the havoc wrought in World War II. Now these countries are re-established and are ready to sell us their products. However, we have set such high tariffs that they cannot possibly come into our markets.

I think almost everyone is for protective tariffs. The question is, when and where do we need protection? The products from many of these countries are kept out of U.S. markets by high tariffs. These are the countries we have helped financially. Their products, if sold in our markets, could give them American dollars which, in turn, would be used by them to buy other American goods. High tariffs prevent them from doing business with us and our manufacturers from selling to them.

Furniture, for example, before the tariff hikes and when imports were at their peak, amounted to less than .05% of the total furniture sales volume for that particular year. Another food item, cheese—chosen here because it is so far removed from furniture — follows the same pattern. Only .04% of all the cheese sold in the United States was imported in that year.

Two things are urgently needed to rectify this situation — a correctly informed and a lobby-proof congress and industry smart enough to know that the wrong kind of protective tariff will ultimately become a destructive tariff.

Ned Bailey
Editor-in-Chief

Step on it for more production

PORTER 43-20J Automatic Hydracut Saw

FOOT PEDAL CONTROL ENDS OPERATOR FATIGUE

Increase lumber production in your plant with these Hydracut Saw set-ups.

1.

Standard Set-up. Hydracut Saw and tables.

2.

Hydracut Saw in single line conveyorized rough mill set-up.

3.

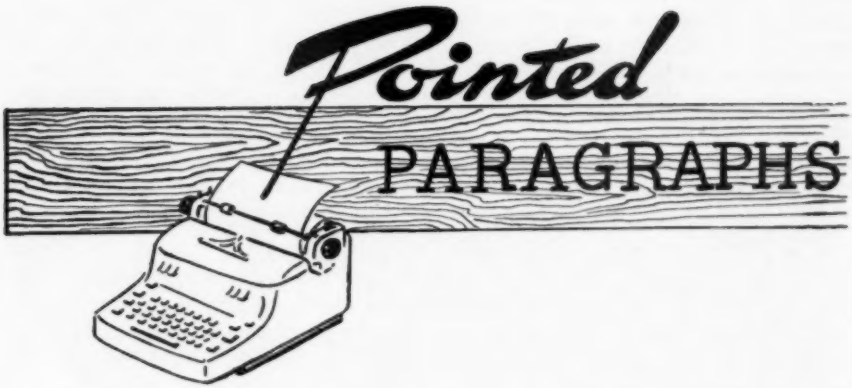
Hydracut Saws in double line conveyorized rough mill set-up.

The Porter 43-20J Automatic Hydracut Saw saves hours of labor . . . enables any cutting room operator, regardless of age, to cut more lumber per day by eliminating tiring hand operation. Operator simply positions the lumber against the adjustable cut-off stops . . . and presses the electrically operated foot control. The saw blade, mounted on a hydraulically operated carriage, *automatically* moves forward to make the cut and *automatically* returns. Fatigue from manual "push-pull" operation is gone.

Stroke length is quickly adjusted by a convenient lever. Cutting speeds range from 0 to 45 cuts per minute.

The new Porter Bulletin 43-20J-1 fully explains the Automatic Hydracut Saw. *Send for your copy today.*

C. O. PORTER Machinery Co.
668 Front Ave., N.W., Grand Rapids 4, Mich.



One way to sell unpainted items such as chests, beds, bookcases, etc., was discovered through the advice of a retail store manager. "Let us have some painted duplicates." The manufacturer of the unpainted products mentioned did just that. He supplied the dealer four different colors in two different finishes with printed instructions on how to do the job. Result: more sales of unpainted merchandise for the manufacturer, more sales of same for the retailer who also sells the paints, brushes, etc., with which to do the finishing.

Have you tried making furniture from knotty pine? This species is gradually gaining favor with large manufacturers through the south and west. The ranch house type of home construction may be what's making it popular. Improvement in the manufacture and finish is also responsible for its more general acceptance.

A case in point, the Brandt Cabinet Works of Hagerstown, Md. Besides a filler-board type table in knotty pine that can be extended to an overall length of 100 inches, they manufacture dropleaf and corner tables. They report an excellent demand for these attractive, well finished pieces.

We are told that we could learn a great deal about selling from a baby—for they are the world's best salesmen. They know what they want and ask for it. They are not satisfied until they get what they want. They learn something new every day. They crawl before they walk, walk before they climb, in fact they move forward one step at a time. They win your confidence and give you theirs because they usually really like most people and show it at every opportunity. They are continually practicing the art of selling themselves.

Several exporters that I talked to while attending the Mississippi Valley World Wide Conference at New Orleans recently were enthusiastic about the sale possibilities for our wood products and woodworking machinery in South and Central America. With regard to the machinery, new or guaranteed used would be desirable. European countries are now getting this machinery business mostly because we haven't gone after it.

If you are interested, write me or Anthony Smyer, International Trade Mart, New Orleans, La. Mr. Smyer is chairman of the International Trade Bureau of New Orleans' largest business organization.

Baby business is big business according to several manufacturers of baby and kiddie furniture and toys. A retailer in Memphis, Tenn., told me his sales of this type of merchandise have been rising steadily for the last two years. Today juvenile furniture represents a good percentage of total sales. Wood outsells metal four to one although the wood items cost more.

Speaking of baby and children's wood furniture and toys, the man just mentioned felt that more design consideration would help. He suggested that manufacturers get the advice of child study experts in developing their designs. He says it would help sell the products in two ways, more suitable merchandise and an authority for the design which could be used as a tie-in for the sales talk.

Furniture manufacturers can afford to be optimistic if the figures released by "Better Homes & Gardens" are correct, and they usually are.

According to that reliable source, the average family moving into a new home today spends about $1,700 for household equipment, including furniture.

Other surveys made by other reliable organizations indicate that most families add steadily to their home furnishings during the next five years. Add to this replacements constantly being made and it would seem that the furniture and allied industries should have good business for a few years.

Surveys of all kinds and for varying reasons are being made by home furnishings organizations. One thing they all agree on, the housewife of today, who does 90% of the actual home furnishings buying, wants to know, "Why is this better?"

The smart manufacturer will pass such information on to his retail outlets. "We use this species of wood because—. We make it this way because—. We use plywood or solid wood because—. We use certain fillers and finishes because—, etc." This approach by the manufacturer helps sell both the retailer and customer.

How to make

BIGGER PROFITS on BOXES

With the Linderman automatic pre-fabricator you can quote lower prices on boxes and yet make bigger profits. It is the ideal machine for producing box stock:

Automatic—fast—high output—minimum labor—eliminates operations—cuts lumber costs.

The Linderman takes *rough edged* stock, edges and joints it automatically with minimum waste. The double tapered dovetail glue joints formed on the Linderman are accepted as "one-piece stock" under U. S. Army Specification #50-62-4B.

What is more, right now we can give you fast delivery. Write, wire, or phone today.

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NEWBURGH, N. Y. U. S. A.

Announcing

A SPECIAL COURSE IN CARBIDE WOOD CUTTING TOOL MAINTENANCE For WOODWORKING TOOL MAINTENANCE MEN

arranged and supervised by the
University of Michigan and North Carolina State College
with the cooperation and technical assistance of
manufacturers of equipment and supplies for
carbide tool maintenance.

INSTRUCTORS — Regular school faculty members plus engineers, technicians and specialists in various operations

EQUIPMENT — Not just one type machine but the latest and most efficient models of all makes designed to grind and sharpen carbide wood cutting saws; groovers; knives, straight, formed and milled-to-pattern; and router bits. These machines will be provided by manufacturers participating in this program

TOOLS — Students will be taught the best grinding methods and procedures for carbide tool maintenance on actual production tools by men who are specialists in their field. These tools will be provided by cooperating manufacturers of carbide wood cutting tools

CLASSES — will run two weeks on the divided class room - work laboratory plan

1st course early in September at North Carolina—later one at Michigan

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PROF. L. A. PATRONSKY
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Congratulations

To University of Michigan and North Carolina State College

for another outstanding example of their service to the woodworking industry.

We consider it a privilege to have this opportunity of sharing and participating in this initial presentation of such an important and needed service for our customers.

E. C. Atkins & Company
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Where does ATLANTIC LUMBER go?

An inviting group of "Travelawn," fine Beech furniture, manufactured by the Goshen Manufacturing Company, Goshen, Ind.

Whether in sturdy, graceful and comfortable outdoor furniture, or in other fields, Atlantic hardwoods and cypress give many manufacturers greater profits with corresponding increased satisfaction to the ultimate users. Each of the several hardwoods has special characteristics that make it advantageous for particular applications. The choice of woods is important to you.

In your selection of hardwoods you have at your call an experienced Atlantic Man who can help you save money and improve your product. His advice will prove helpful to you.

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Headquarters FOR HARDWOODS

Modern SAW LOGS *Do a* STRIP-TEASE

PART 4

By PAUL H. GRAHAM

IT is not always required to have complete coverage of the surface in barking. During easy barking seasons removal of bark in one area forces water beneath the bark on either side of the area covered by jets. The resultant pressure lifts additional bark from the surface. For extremely rough wood or larger logs, however, 100% coverage gives best results. This barker removes bark located about knots, limb ends and other projections very efficiently. It is interesting to note that 4-foot sticks bowed as much as 6 inches have been barked in this machine although more than one pass is sometimes required.

Most of the production reports received on this machine have been provided by the pulpwood industry. Its capacity varies with species of wood and seasonal conditions. Usual pulpwood species averaging 7 inches or less in diameter and of 4-foot lengths are handled at a rate of about 1,000 sticks per hour. Other reports show machine capacity up to 18 cords per hour. One report even recorded a production of 4 cords of frozen hardwood per hour.

Bark removed by this barker requires little if any drying treatment for use as fuel or by-products since it does not remain in contact with water except for a very short time. The average moisture pick-up is estimated at only 5%. If the wood has not been stored in water or water transported, the bark will be suitable as fuel or for other by-product purposes without further drying treatment.

Ring-type hydraulic barkers are becoming increasingly popular for barking both large and small saw logs. Former weaknesses have been overcome, such as difficulty in holding seal around the ring under high water pressure, and the bugs have been pretty well worked out of log handling and ring adjustment problems. Automatic operation is currently being engineered.

There are various methods of operation characteristic of different ring barker types. The log may revolve under the ring nozzles as it passes through for barking, or the log may be passed through the ring without rotation. The log may be stationary while the ring rotates about it or the log may move in a large ring while another ring is equipped with jets and revolves around the log. These ring arrangements may be whole-log rings or segment ring arrangement.

In one of the simpler hydraulic ring barker installations the barker is encased in a heavy box-like structure and logs revolving on trunnions are carried beneath an arch supporting three nozzles that deliver between 1250

The Murco-Adams-Clark barker mounted on truck with power take-off.

and 1600 lbs. of water pressure per inch against the bark for removal. The bark falls into a refuse conveyor and the clean logs pass through the barker to a haul-chain conveyor leading to the sawmill.

This ring barker handles logs of practically any length and up to 5 feet in diameter. Log straightness is not a prime requirement as it is claimed that any log that can be rotated by the trunnions can be barked clean. This barker installation was formerly used only for pulpwood logs but is now used for saw logs as well and is fed by the log haul from the pond.

Another ring-type hydraulic barker accommodates logs up to 30-inch diameter by automatic operation and control. The logs are brought up by conveyor from yard storage and are passed, without rotation, through a ring of 36 high-pressure nozzles which direct water perpendicularly against the log at 1150 p.s.i. Each nozzle is equipped with separate control and only part of the ring is used for the smaller logs.

Where the logs to be barked are over 30-inch diameter up to 60 inches, the ring separates into three segments and two passes of the log are usually required which are made with a 60-degree

Loading the Murco-Adams-Clark barker.

Unloading the Murco-Adams-Clark barker.

index. The water flow is trigger controlled so is used only while the log is within the ring. A pressure accumulator, which is charged only during non-spraying periods, provides a water capacity about 250% greater than the pumping capacity.

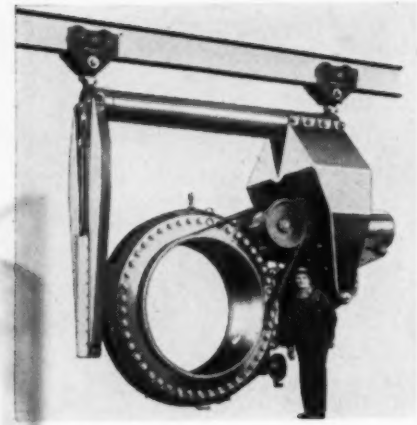
The rate of bark removal per lineal foot is about the same for small as for large logs. The average barking speed of this barker, which is connected to the log haul, is said to be about 35,000 board feet of logs per hour. A pulping operation is carried on in connection with this mill operation and advantages resulting from the use of this barker include cleaner wood and handling of small aspen and poplar which was formerly broken and spoiled for pulping purposes when a mechanical barker was used.

The whole-log ring barker has become one of the most popular of the ring barkers. In this barker the log passes through a rotating ring of nozzles which jet water on the log at pressures up to 1200 p.s.i. to remove the bark. Developed within the past three years, the barker is available in sizes ranging from 18-inch to 80-inch diameters inside the ring. Standard sizes currently used include: 18, 24, 30, 36, 42, 48, 70 and 80-inch diameters.

The barker is usually installed by making a break in the log haul from the pond and inserting the barker at that point, or building a separate barking house in the log pond for independent operation. The ring barker itself is usually mounted on rails on the floor or is suspended from a monorail. It may be arranged for manual or automatic operation and the trend at the moment seems to be towards automatic operation.

This barker operates at normal water pressure between 1100 and 1400 p.s.i., depending upon log species and season of the year. The water is discharged from four nozzles around the ring, nozzle size is 3/4-inch long and 1/8-inch wide, which are directed to the center of the ring. The ring itself is designed to turn at about 60 r.p.m. on the largest size barker to about 350 r.p.m. on the smallest.

Previous difficulty in holding seal around the ring under high water pressure has been overcome in this barker with a method of sealing high pressure water between the stationary part and the rotating ring by means of a hard-



Courtesy Hansel Eng. Co., Inc., Seattle, Wash.

Hansel whole-log, ring-type hydraulic overhead barker is suspended from mono-rail at the St. Paul & Tacoma Lumber Company mill. This barker operates at normal water pressure of 1100 to 1400 p.s.i., and water is discharged by four nozzles around ring directed to log in center of ring. In operation rotating ring of nozzles jet water at high pressure against log to remove bark with adequate means provided to adjust ring to be concentric about logs of different diameters in a matter of seconds.

faced steel ring which bears against a water-lubricated celeron face. The high internal pressure against the steel ring is relieved by backing the ring with pressurized water so that a balance is obtained and friction between the two faces is thus reduced to minimum.

The barker is provided with means for adjusting the ring to be concentric about logs of different diameters but this is required usually only between extreme sizes. The operator controls vertical and horizontal movement of the barker with a single control to center the ring about the log. This eliminates any need for sorting logs for diameter or length and logs can be run through the barker end-to-end as fast as the log will allow. Adjustment takes only a few seconds and can be made without interrupting the flow.

If the barker is set for a 30-inch diameter log, no adjustment is needed for a following 14-inch log, but adjustment is required for logs 13 inches in diameter or smaller. Conversely, if the barker is set for a 4-inch log, the return adjustment, taking only two seconds, would have to be made for any log over 17 inches in diameter. Using the controls provided, a 30-inch log with a bow of 12 inches can travel through the 36-inch barker without slowing down either the log haul or the barker.

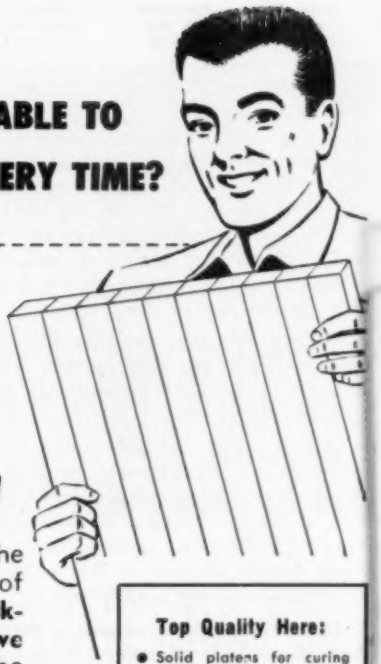
Variable conveyor speed operates to advantage as conveyors are a separate installation from the barker. The nozzle water pressure can be varied in a matter of seconds for different types of logs, although this is not usually done. Variable rotational speed can also be provided but this is seldom found necessary.

Water consumption has been reduced radically with the whole-log ring barker. It is estimated to be a maximum of about 800 U. S. g.p.m. at 1450 p.s.i. under hard winter barking conditions for large fir to about 700 g.p.m. at 1050 p.s.i. for summer barking of hemlock. Mills on the West Coast at the present time are using from 600 g.p.m. on smaller barkers up to 850 g.p.m. on large barkers with log haul speeds from 60 to 120 f.p.m.

The water consumption is directly proportional to the output of the barker and any increase in log haul speed can be handled at the barker through larger nozzles. Where it becomes necessary to use less water, this consumption can be practically halved by fitting two nozzles instead of four and running the log haul at half speed.

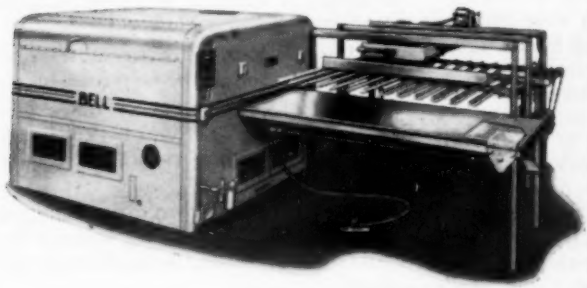
The rate of speed of barking may be taken as the rate at which logs travel on the log haul as barking is a continuous operation with the logs

HOW IS THIS BEGINNER ABLE TO TURN OUT PERFECT BONDS EVERY TIME?



BECAUSE THE "300" IS ENGINEERED TO SOLVE PROBLEMS *AUTOMATICALLY!*

The Bell "300" Electronic Gluer is the brilliant result of the combined skills of Bell **electronic** engineers, our **woodworking machinery** engineers, and **adhesive** engineers. **Their skill** in building the "300" means it takes **no special skill** to operate it! Won't you let us **prove** our "300" in a demonstration!



Top Quality Here:

- Solid platens for curing the entire panel, permit immediate machining.
- 4" movement of side squeeze jaws to permit panel width variation.
- Even pressure application (with oversized cylinders) for entire length of press.
- Self-tuning electronic unit. Bell-designed.
- Top pressure to help flatten warped stock.
- Completely packaged unit: Press, electronic heater, lay-up and feed tables, glue applicator.
- Field demonstrator's assistance in setting up machine for maximum efficient production.

THE BELL MACHINE COMPANY
71 Jackson Drive
OSHKOSH, WISCONSIN

BELL WOODWORKING MACHINERY

Barker size inches	Minimum log dia. inches	Minimum butt dia. inches	Minimum log length feet	Maximum log haul speed fpm	Drive motor h. p.
18	2	14	4	250	15
30	2	26	4	160	25
48	4	42	8	100	40
80	8	74	10	35	75

traveling end-to-end. The output can be reckoned as log speed times average size of the log with a factor depending upon the speed of the feeding log haul at the pond. The maximum log haul to date is around 125 f.p.m. but small installations are now being engineered with speeds up to 230 f.p.m.

To provide some idea as to the range of these hydraulic ring barkers, a few of the standard barker ranges are listed in table form.

The minimum lengths shown in the table are achieved by the use of hold-down rolls. Without hold-down rolls, the minimum lengths would be 50% longer. There is no limit to the maximum length of logs as far as barker considerations are concerned.

There is no bark disposal problem with this barker since there is no mechanism below a ring barker to gather bark. The bark and water merely run off in a conveyor below the barker to the boiler or to storage bins and the water is drained off in transit.

Most of the whole-log ring barkers installed on the West Coast are designed to handle logs up to 70-inch diameter. The smallest in use in this region thus far is a 30-inch barker and the others run through larger sizes to the 70-inch barker. The 30-inch barker is used for logs ranging in size from 3 to 18 inches in diameter for barking at speeds up to 200 f.p.m. A small barker is now being engineered for eastern wood which will incorporate hold-down rolls for small diameter and short length logs and others will soon appear in eastern mills.

Various sawmills using this whole-log barker claim up to 30% savings in saw life, 3% increase in clear lumber, and a corresponding increase in board feet lumber produced due to the sawyer being able to cut clean logs more efficiently. All report a big reduction in clean-up hours at the mill.

Among the general advantages claimed for hydraulic barking and hydraulic barkers as a whole are:

1. Less waste where logs are used for pulp or by-products requiring clean wood.

2. Reduces wood loss with elimination of one or more saw cuts.

3. Water jets follow crooks, get into decay spots and clean out rotten knots where mechanical barkers would remove both good and bad wood fiber indiscriminately.

4. Where wood is not water-stored or water-transported, permits better bark utilization as high-speed hydraulic barking keeps moisture content of bark low.

5. Barks log 100% clean, without brooming or splitting of log ends, solid wood loss, dirt or surface rot.

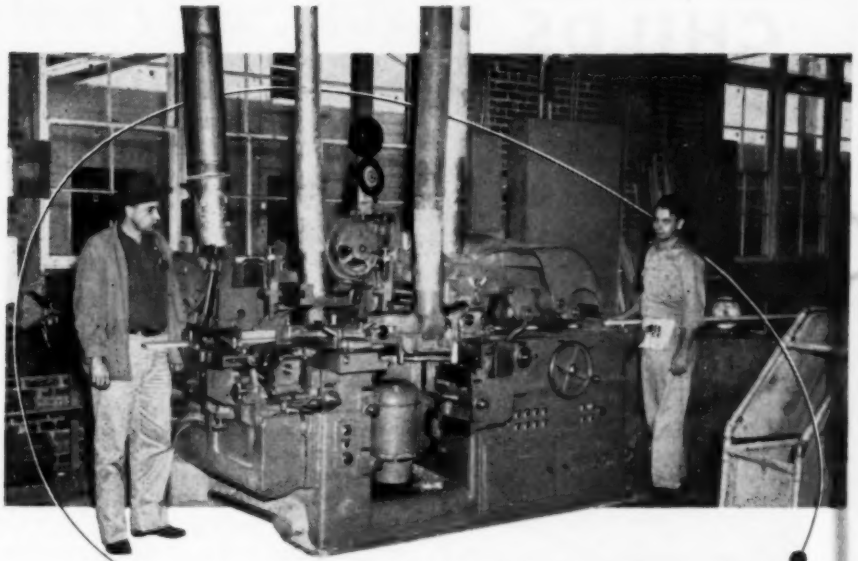
6. Permits barking of any species of log regardless of shape or condition.

Users subscribe to many other advantages resulting from barking saw logs before sawing, regardless of the type of barker used.

A few replies received to inquiries made to sawmills that use barkers for their saw logs make the following comments:

"Savings in log scale of 5% or more have been realized."

"Our sawyer has a better opportunity to inspect the log before breakdown starts."



NEW MACHINERY IS A GOOD INVESTMENT!

Users say...

". . handled doubled sales volume with absolutely no additional overtime on the moulder . ."

". . we are able to make as many as fifteen to sixteen different set-ups a day . ."

". . proved to be a most worthwhile investment . . . increased the volume of work . . . improved quality . . . minimum operating expense . ."

". . increased our production . . . sanding operation cut in half . . . same amount of work as on two older machines . ."

". . machine is doing excellent work . ."

". . now doing on this machine work done on 2 machines of another make . ."

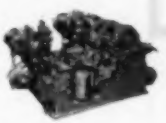
". . machine man likes ease of changing speed without use of frequency changer . ."

". . saves approximately 1/3 of production time and 1/3 of set-up time . . . able to get nicer work . ."

(Excerpts from actual letters on file. Names on request.)

EKSTROM, CARLSON HI-SPEED MOULDERS

Check your costs and see if it wouldn't *pay* you to invest in new machinery like this. ECCo Hi-Speed Moulders have cutter speeds adjustable from 3600 to 7200 rpm *without use of frequency changers.* Jointing of cutter heads for high-speed work is an easy operation. Feed rate is quickly and continuously adjustable between 25 and 225 fpm. All in all, ECCo Hi-Speed Moulders offer you many money-making opportunities — get the full information as it applies to *your* operation.



EKSTROM, CARLSON & CO. ECCO **1411 RAILROAD AVE., ROCKFORD, ILL.**

MOULDERS • SANDERS • ROUTERS • SHAPERS CARVERS • PANEL SIZERS • GROOVERS

CHILDS
2" x 6"
MOULDER
Ball Bearing — All Electric

Only
$2,995.00
Complete

MOTORS: 10 H.P. Driving Motor
1 H.P. Feed Motor with Stop, Forward and Reverse Switch

FEEDS & SPEEDS: 6000 RPM Cutterheads 25-35-55-75 FPM

WEIGHT: 2,750 lbs.

★ Heads on this machine are adjustable in two directions—making for easy set-ups. Top and side chipbreakers are adjustable. All heads are self-centering and shaper collars may be used in all positions. Heads may be jointed and attachment is available. Dust hoods are standard equipment.

Write for literature, TODAY!

W. P. CHILDS MACH'Y. CO.
Atlanta, Georgia

"Barker brings about better wood recovery."

"Adds to the utilization of slabs and edgings."

"Reduce loads and maintenance on our conveyor system."

"Barker provides clean slabs and edgings that can be chipped for pulp plant."

"Beats hand peeling 1,000%."

"Solved our bark disposal problem."

"Stopped crowding of saws and miscuts which were a nuisance in our mill."

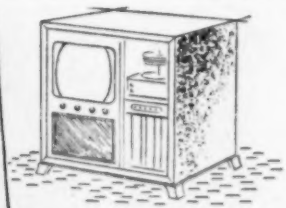
It is important for best results with any barker that the machine be well located. Portable barkers require less careful planning than permanent installations but their location should be selected with good judgement. Hauling and handling will be greatly minimized where the barker is located to provide easy access to and from the machine. The barker should always be centrally located and easily accessible to associated phases of the parent mill operation.

Bark disposal is also a primary consideration and adequate means should be provided to carry the bark away from the barker. Cleanliness of water is important in hydraulic barking as refuse in the water can drop the pressure. Many installations use filters if the water source contains refuse. General maintenance of operating parts is important in all barkers. As a final word of advice, the efficiency of any barker is only as good as the efficiency of the operator. He should be a responsible person of good judgement, and be possessed with the proper skill and a good working knowledge of log species and characteristics.

Modern saw logs every day pass through mechanical and hydraulic barkers in increasing number at mills all over the country to emerge with their bark cleanly and completely re-

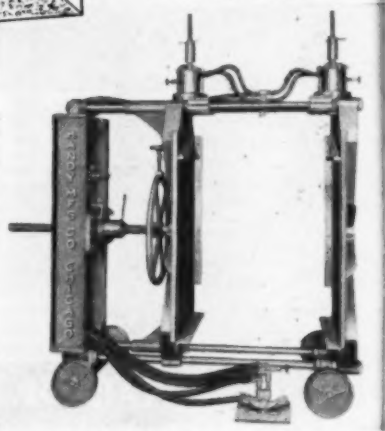
Here's the way to assemble those cabinets right

NEW handy DUAL-TRU CASE CLAMPS HAVE THAT MAGIC TOUCH EVEN WITH *MITRE JOINTS*



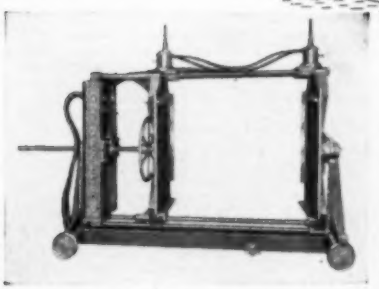
Take a good look at that portrait of Handy's new Dual-Tru. Picture your toughest cabinet job going into this clamp and coming out square and true—just right—in minimum assembly time. No matter what the cabinet design, this superb new equipment has just about everything. At the right is the No. 405 Series with exclusive Handy No. 396 hollow-bore top pressure units, equipped all around with special Handy stroke control. Here is the sure answer to clamping mitred cabinets, because in a few moments the clamp is set-up to squeeze both sides and top at just the right speed, just the right pressure and to the correct dimensions to assure perfect joints.

Because you get perfectly controlled and correctly applied pressure for large cases or small ones, the Handy Dual-Tru assures you a new high level of production at lower cost in your cabinet room. At last, there's a better, surer way; modernize now.



Built for modern production. Patents Pending.

handy



Here is the No. 400 Series Revolving Case Clamp with standard No. 397 hollow-bore top pressure units and counterweights. Any Handy Case Clamp may be equipped with one or more of these top pressure units, which are mounted up out of the way but reach down to apply top pressure even on a small cabinet. Revolving feature permits operators to work with ease on any part of the case.

You GET DEPENDABILITY

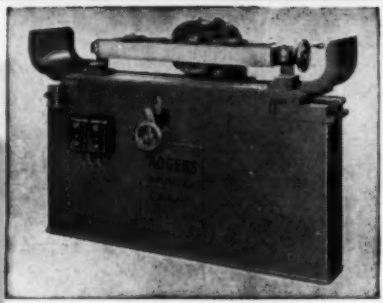
The new Handy Case Clamp combines the best of advanced design with proved quality and ruggedness. Notice the main cylinder is hollow-bore, does not ride on the clamp-plate, permits hand operation should air fail. Look at those heavy, accurately machined castings. These clamps are Handy clamps, famous for decades as the best buy by far.

HANDY Manufacturing Company

2436 WEST LAWRENCE AVE. • CHICAGO 25, U.S.A.

NEW ROGERS "NT JUNIOR" KNIFE GRINDER

WITH REVERSING MOTOR DRIVE



Woodworking knives receive the fastest precision grinding available on this completely electrical straight knife grinder.

The Rogers "NT Junior" can give up to 30% less maintenance cost . . . longer knife life and less production machine down time.

Reversing motor drive . . . "V" way table bearing surfaces . . . knife bar with 2 faces for thick or thin knives . . . and many other exclusive ROGERS features.

Many sizes available from 32" to 90". Send coupon or write for further information.

CARBIDE SAW GRINDER TYPE SC

Rogers type SC is the only grinder designed specifically for circular carbide tipped saws to 24" diam. Efficient and low cost. Write today.

SAMUEL C. ROGERS & CO.

209 DUTTON AVE. BUFFALO 11, N. Y.

SINCE 1887

Please send further information

( ) NT Junior ( ) Type SC

Company.....

Address.....

City.....Zone.....State.....

Attention of.....

moved in a modern strip tease—sawmill style—to make possible the production of more and better quality lumber with less effort, lower cost and greater efficiency than was ever possible before the advent of the barker. The sawyer's loud and fervent plea to "take it off" has finally borne fruit to his and our mutual advantage.

REFERENCES

Waterous Limited, Brantford, Ontario, Canada; Efurd Machine & Weldong Co., Bossier City, La.; Waterville Iron Works, Waterville, Me.; Smith-Lossett Machine Co., Picayune, Miss.; Clark Mathewson, Lake City, Fla.; Crouse Mfg. Co., Crouseville, Me.; Sandy Hill Iron & Brass Works, Hudson Falls, N. Y.; Canadian Forest Products Co., Ltd., Pacific Veneer & Plywood Division, New Westminister, B. C., Canada; John H. Pearce, Industrial Engineer, Seattle, Wash.; U. S. Plywood Co., Mapleton, Oregon; Ederer Engineering Co., Seattle, Wash.; E. V. Prentice Machinery Co., Portland, Oregon; Pope & Talbot, Inc., St. Helens, Oregon; Fraser Co., Ltd., Cabano, N.B., Canada; Creighton & Smith Motors Co., Ltd., Fredericton, N.B., Canada; Crawford & Doherty Foundry Co., Portland, Oregon.

Friction Barkers:

Allis-Chalmers Mfg. Co., Basic Industries Dept., Milwaukee, Wis.; Midwest Creosoted Products Co., Mena, Ark.; Dierks Lumber & Coal Co., Broken Bow, Okla.; Three States Lumber Co., Mena, Ark.; Luther Doty Treating Plant, Dadeville, Ala.; Waterous Limited, Brantford, Ontario, Canada; Carthage Machine Co., Carthage, N. Y.; Harry A. Lowther Co., Chicago, Ill.; American Defibrator, Inc., New York, N. Y.

Impact or Hammer Barkers:

Wood Peeler Company, Lake City, Fla.; Nekoosa Portable Wood Peeler, Nekoosa Foundry & Machine Works, Inc., Nekoosa, Wis.; Click Mathewson, Lake City, Fla.; TVA (tight chain barker).

Hydraulic Barkers:

Weyerhauser Timber Co., Longview, Wash.; Allis-Chalmers Mfg. Co., Basic Industries Div., Milwaukee, Wis.; Soundview Pulp Co., Everett, Wash.; Puget Sound Pulp & Timber Co., Bellingham, Wash.; Weyerhauser Timber Co., Everett, Wash.; Crown-Zellerbach Corp., Seattle, Wash.; Worthington Pump & Machinery Co., Harrison, N. J.; Hansel Engineering Co., Inc., Seattle 9, Wash.

General Barker References:

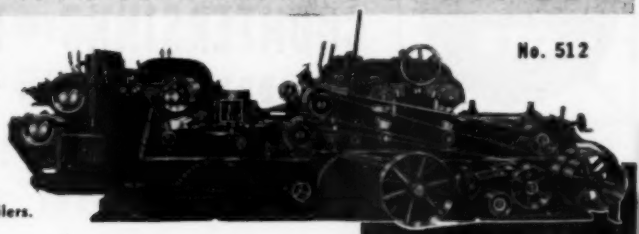
American Pulpwood Association; U. S. Forest Products Laboratory and U. S. Forest Service offices; Louisiana Forestry Commission; Tennessee Valley Authority, Division of Forestry Relations; Forest Products Div., Forestry Branch, Dept. of Resources and Development, Ottawa, Canada; Wood-Treating Chemicals Co., St. Louis, Mo.

The End.

NEWMAN MACHINES

Newman

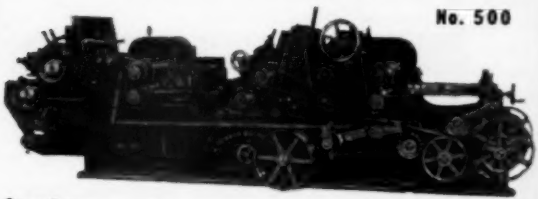
No. 512



Capacity: 16" and 24" wide, 8" thick.
Speeds up to 325 feet per minute.
8" dia. cutting circle.
Six 12" dia. feed rolls.
Single and double profilers.

BALL and ROLLER BEARING PLANERS AND MATCHERS

No. 500



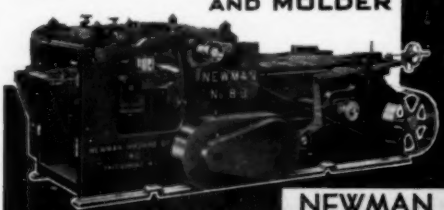
Capacity:
14" and 24" wide, 6" thick. Speeds 40 to 200 feet per minute. 7" cutting circle. Six alloy steel feed rolls. High carbon special alloy steel cylinders. Single or double profilers.

ORDER NOW FOR EARLY DELIVERY

ALL NEWMAN cylinders or heads are DYNETRICALLY BALANCED insuring an accurate and superbly finished product.

Ball and Roller Bearings

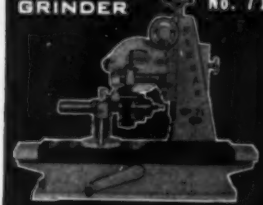
No. 8-B PLANER, MATCHER AND MOLDER



Unsurpassed for work in small and medium mills

The ball bearing NEWMAN 71 (shown below) will grind all sizes of cutter heads. Table is 33" long by 9" wide with horizontal travel of 25" and is heavily ribbed to maintain accuracy over entire travel. Maximum cutter head swing is 11".

HEAD GRINDER No. 71



No 55 AUTOMATIC PINEAPPLE FEED TABLE

The NEWMAN 55 feeds stock automatically to high speed planers and matchers up to 450 lineal feet per minute. Capacity: 30" wide, 8" thick. All adjustments and controls are centrally and conveniently located.

The NEWMAN 8-B planes 22" wide and 8" thick, joints 4" thick and will match 14" wide. 6" diameter feed rolls. Speeds of 30, 50 and 75 feet per minute.

MAY WE SEND YOU FULL DETAILS?

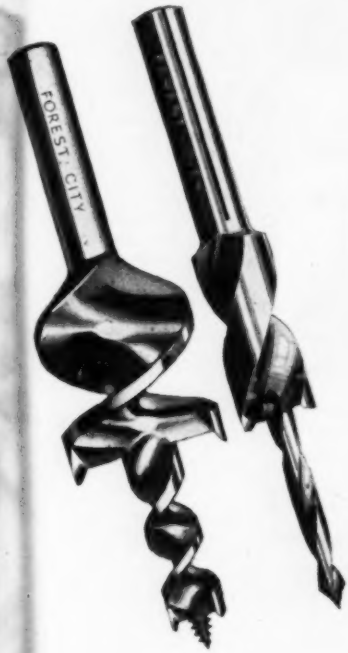
NEWMAN MACHINE COMPANY, INC.
GREENSBORO, NORTH CAROLINA, U. S. A.

FOREST CITY

COUNTERSINKS AND DRILLS

EASY BORING • CLEAN CUTTING

COMBINATION TWISTS
SPLIT SHANK
ADJUSTABLE
OR SOLID TYPE



CUT WOOD BORING COSTS!

Forest City Wood Boring Tools are built for maximum cutting requirements. Sharp tough cutting edges, ample chip clearance, heat treated for long cutting life — these are features which make these tools work easier and faster — *to cut wood boring costs through unusual cutting efficiency.* Sixty years of experience in the woodworking industry have made them that way.

Specify Forest City on your Next Order.

Send for Latest Catalog and Listings.

CALL YOUR LOCAL DEALER

Forest City Tools are handled by all leading distributors. Call your local dealer, or write for a copy of our latest catalog.

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1218 KISHWAUKEE ST. • ROCKFORD, ILLINOIS

HOLLOW CHISELS AND BITS • MACHINE BITS • PLUG CUTTERS

MACHINE DRILLS • COUNTERSINKS • AUGER BITS • ROUTING TOOLS

GLUES

USED IN THE WOODWORKING INDUSTRY

Part 1 . . . . . *Animal Glues*

This month we are presenting an article on animal glue. The material for this article comes from "Animal Glue in Industry," published by the National Association of Glue Manufacturers, Inc. Next month the article, written by an authority in the field, will deal with synthetic resin adhesives.

TO TELL the complete story of animal glue and its place in civilization, it is necessary to turn to early Egyptian culture. Archaeologists, examining furniture found in the tombs of Egyptian pharaohs, find that veneering and inlaying were arts known by these people. The furniture had been assembled with glue. For more than 3000 years, animal glue served almost every adhesive need of civilization.

Animal glue was first mentioned in literature about 200 A.D. It was used in Holland in 1690 and first manufactured in the U.S. in 1808. Today there are more than 36 plants selling over 150,000,000 pounds annually.

In physical form, animal glues are odorless, dry, hard, hornlike materials, somewhat transparent, ranging in color from light amber to dark brown. They are supplied generally in ground form, but may be furnished in flake, pearl, or pulverized states at the option of the purchaser. The liquid animal glues and flexible glues of commerce are modifications and specialized preparations of dry animal glues.

The users of animal glue read like a "Blue Book of American Industry." The general public knows glue mostly as a woodworking adhesive. However, more than three-quarters of the animal glue produced today is used for purposes outside of the woodworking field. Important base uses are: binder, sizings, colloids.

As adhesives or binders, animal glues have long been used with paper, wood, leather, fibre, felt and similar materials. Manufacturers of such products as musical instruments, coated abrasives, luggage, paper containers, matches and gummed paper products take advantage of animal glue's ability to adapt to different use conditions and its durability. Animal glue-bound books from the public libraries have circulated without a break for fifty years. Violins of the old masters reproduce perfect tones after 300 years of use; animal glues hold them together and season the voice box.

For sizings and coatings, millions of pounds of animal glue are used each year. Protective coatings are applied to textiles, paper, floor coverings, packaging and gasket materials. Synthetic rayon yarns, devoid of natural oils, require sizing with animal glue to prevent

abrasion or chafing at the looms. Glue coatings are used on finished silks, rayons, cottons and wools as splash-proof finishes to stiffen the fabrics, and to aid in dye levelling. Bond, writing, ledger and currency papers are sized with glue to withstand wear, resist water and ink, and to facilitate erasure. Twisted paper, sized with glue, can be fashioned into strong reed furniture.

Animal glue has great miscibility, mixing readily with such materials as clay, sand and sawdust. The head of a match is a combination of glue, igniting and other substances. Similar applications are found in doll composition heads, frescoes, wood and cork compositions. Composition cork is made of ground cork, glue and glycerine and is used for gaskets, washers, insulation and food container closures.

As a collodial gel, glue is used in such products as printing rollers, shoe polishes, and hectograph plates. The printing roller, a glue glycerine combination, is a pliable yet durable solid solution that transfers printing ink from the fountain to the type form. The pliable surface of the roller allows for uniform pressure to be exerted on the irregular surfaces of the form. Essential to book, magazine and job printing, the glue glycerine roller is also used in roller coating, textile printing and in transferring impressions to metal surfaces for autos, pullman cars, and stoves. As a collodial gel, animal glue has also been used in the development of many synthetic items to replace silks, ivory, marble and veneer.

Useful also as protective colloids, animal glues are valuable in electro-metallurgic processes. Addition of glue prevents crystallization and makes for smooth, hard deposits of silver, tin and copper. Glue is also used in acid pickle baths where the scale is removed from iron and steel prior to galvanizing. Rubber compounds, India ink, and fire-extinguishing substances also make use of the colloid nature of animal glue.

There are two principal types of animal glues—hide and bone origin. The adhesive is used in woodworking for edge gluing, assembly gluing, veneering and finishing. The proper selection of the animal glue for the application at hand simplifies the process and provides efficient operation at maximum economy with consistently strong joints.

For assembly and edge gluing there are three major groups of animal glue, all providing a wide margin of safety factor and a tensile strength far greater than that of wood itself.

(1) For maximum strength and shock resistance—jelly strength grades testing 310-400 grams.*

(2) For average strength and shock resistance—jelly strength grades testing 210-300 grams.

(3) For non-critical strength and shock resistance—jelly strength grades testing 120-200 grams.

For softwoods a heavy-bodied adhesive should be used; for hardwoods, a thin-bodied adhesive is best. This variation in the glue concentration of a given test grade of glue directly leads to consistent gluing results through (a) control of the thickness of spread of the adhesive; (b) degree of penetration into the wood and proper anchorage of the adhesive; (c) holding of the adhesive film at the joint, and (d) desired speed of set and length of tack of the adhesive at the joint face. The following table gives average formulations for the various test grades of glue for assembly gluing where wood and room

* Broadly speaking, jelly-strength measurements range from about 30 grams (weak jelly) to 500 grams (exceptionally strong jelly). Viscosity and measurements are expressed in terms of millipoises and range from 25 (quite watery) to approximately 200 (very viscous).

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WOOD WORKING DIGEST

CIRCULATION DEPARTMENT

WHEATON, ILLINOIS

WOOD WORKING DIGEST

JUNE, 1952

READERS' SERVICE DIVISION

This insert (please note all four cards) is designed to help you obtain woodworking information. Any of these cards mailed to our Service Division will receive careful attention. There is also a form within the book for shop problems, used machinery, etc. Let us know when we may be of service to you. No obligation.

Please send information on PRODUCTS and SUPPLIES described on the following pages:

....

....

Name ..... **Position** .....

Company .....

Street .....

City ..... **Zone** ..... **State** .....

PRODUCT INFORMATION

A quick, free way to obtain information about the equipment and supplies you need to buy.

- Abrasives
- Adhesives, animal
- Adhesives, casein
- Adhesives, phenolic
- Adhesives, resin
- Adhesives, resorcinol
- Adhesives, urea
- Air Compressors
- Band Saw Tires
- Bits, auger
- Bits, dowel
- Bits, router
- Bleaches
- Belts
- Boring Machines
- Chisels
- Clamp Carriers
- Clamps
- Conveyors
- Cutters
- Dimension Stock
- Dowels
- Attachments
- Drill Presses
- Drills
- Dry Kilns
- Dryers
- Dust Collecting Equipment
- Fasteners
- Files
- Filters
- Finishes
- Glue Equipment
- Gluer, electronic
- Grinders, knife
- Grooves
- Guards
- High Frequency Heating Equipment
- Hose
- Jointers
- Knives, moulder
- Knives, planer
- Knives, shaper
- Knives, veneer
- Lathes
- Lumber
- Machines, bending
- Machines, bor & crate
- Machines, carving
- Machines, clamping
- Machines, door and sash
- Machines, dovetailing
- Machines, dowel
- Machines, filing & sharpening
- Machines, gluing
- Machines, mortising
- Machines, nailing
- Machines, carmill
- Machines, saw setting
- Machines, sawing
- Machines, stapling
- Matches
- Moisture Meters
- Mortise chains
- Moulders
- Nails
- Packaging Material
- Paint
- Planers
- Planes
- Plywood
- Presses, plywood
- Putty
- Rasps, hand
- Rippers
- Routers
- Safety Clothing
- Sanders, automatic strap
- Sanders, belt
- Sanders, contour
- Sanders, disc
- Sanders, drum
- Sanders, endless bed
- Sanders, portable electric
- Sanders, special
- Sanders, variety
- Sandpaper
- Saws, arbor
- Saws, band
- Saws, chain
- Saws, cross-cut
- Saws, cut-off
- Saws, gang
- Saws, portable electric
- Saws, radial
- Saws, rip
- Saw blades, band
- Saw blades, carbide
- Saw blades, circular
- Saw Guides
- Screws
- Shaper Collars
- Shaper Equipment
- Spray Equipment
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temperatures are in the range of 74-80° F. The glue should be kept at 140 to 145° F. for the best results.

Glue Grade (Test in Grams)	Porous Woods (Weight, Water to Glue)	Non-Porous Woods (Weight, Water to Glue)
380	3—1	3¼—1
350	2¾—1	3—1
315	2½—1	2¾—1
285	2¼—1	2½—1
250	2¼—1	2½—1
225	2—1	2¼—1
195	1¾—1	2—1
165	1½—1	1¾—1
135	1¼—1	1½—1
85	1—1	1⅛—1

Considerable variation in the speed of set and corresponding length of tack is possible with animal glues. For slower speeds of set the lower-testing grades may be employed, or the ratio of water to glue may be increased for the specific glue.

For those specific glue operations requiring an appreciable period of time for assembly before pressure can be applied, as in hand gluing of irregular pieces, the gluing of mortise and tenon joints, dowel work and case goods assembly, the speed of set and period of tack of the adhesive may be varied at will through the incorporation of jell-depressant chemicals. These chemicals, commercially available, are added direct to the warm animal glue in amounts sufficient to obtain the working characteristics desired—retarding the rate of jelling of the adhesive and prolonging the period of tack. If sufficient jell-depressant is added, a cold liquid glue is produced which may be applied at room temperatures in the range of 70-85° F.

Cold liquid animal glues are particularly well suited as the adhesive in assembly work employing compression dowels and mortise and tenons. Here the liquid glue furnishes sufficient moisture to expand the compressed wood to fill the joint rigidly and firmly, and the set of the glue is retarded to give a period of tackiness long enough to insure permanent adhesive anchorage at the joint. The following cold liquid animal glue formula is suggested for this specialized application:

10 parts by weight 285-gram test animal glue

20 parts by weight water

2 parts by weight jell-depressant

The dry glue is swollen in the cold water until soft (one to two hours); melted in a jacketed container at 145° F.; the dry jell-depressant chemical added and dispersed in the warm glue solution; the adhesive cooled to room temperature is ready for use. For particularly efficient use, a pressure gun is preferred by many operators using the above formula.

Animal glues can be used in all kinds of veneer work. Depending on the specific application and required length of tack, the warm animal glues, cold liquid animal glues or modified warm animal glues partially treated with jell-depressants find use.

The use of animal glue sizes in the finishing of quality furniture surfaces is not commonly known by the public. In this process a dilute warm animal glue solution at approximately one pound of glue per gallon of water is applied to the wood surface and let dry. The compression grain is raised and the glue fills the porous exposed wood structure. On sanding, a glass-like surface is obtained, which is stable against moisture changes and which takes a lasting final stain or finish.

There are many instances in which a moisture-resistant joint is desired. Animal glue can be made moisture-resistant through the following practical method.

(1) Select the type and test grade of glue normally required.

(2) Prepare the warm glue solution following standard procedures.

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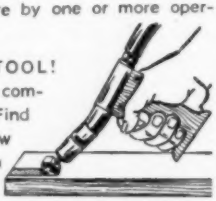

Handy-grip, automatic spreader heads

GLUETOOLS, Inc.

1930 N. Meridian St. Indianapolis 2, Ind.

(3) To one face only of the wood joint to be assembled, apply with sponge or brush a solution prepared from one pint of commercial formalin and nine pints of water in which has been dissolved ½ lb. of borax. Allow the excess moisture to be absorbed from the surface of the wood.

(4) The glue solution is applied to the matching face of the assembly.

(5) The formalin-treated and glue-treated members of the assembly are then brought together and placed under pressure.

(6) The glued assembly, after removal from the clamps, is allowed to season for from five to seven days, to permit a gradual even development of moisture-resistant properties.

This simple procedure provides moisture-resistance while still maintaining strength and shock resistance.

In all adhesive work there are occasional joint failures. With animal glue such joint failures as may occasionally be experienced are more properly defined as gluing failures. Among the more common causes of gluing failure are:

(1) Improperly seasoned wood. A kiln-dried wood is desirable wherein the excess moisture has been properly reduced to the moisture content equilibrium under which it will be used (8% to 12% m.c.), with freedom from case hardening and internal stresses.

(2) Poorly dressed or machined wood. Glue is not a filler—the joints should be true.

(3) Insufficient clamp pressure. Sufficient pressure should be applied to bring the individual members into alignment, squeeze out air and excess glue, and hold the members in rigid position during development of adhesive strength. Pressures of 100 to 200 pounds per square inch are recommended.

(4) Excessive clamp pressure. Pressures over 150 to 200 pounds per square

Saddles or scoops any shape or size of chair seat.

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AUTOMATIC SADDLE SEAT MACHINE

SIX TO TEN SEATS PER MINUTE

CONTINUOUS PRODUCTION HOPPER FEED

The McKnight No. 1-E Saddle Seat Machine cuts six, eight or ten seats per minute. It is the highest speed and most efficient saddle seat machine manufactured. Stock is carried from the hopper to the cutting head by a steel chain. Motor, 10 HP, 3600 R.P.M., ball bearing type. Cutting Head runs at 5000 R.P.M., is mounted in ball bearings. *Write for further details.*

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inch are generally unnecessary and are likely to squeeze out glue essential to the formation of a sound joint.

(5) Removal of assembly from clamps before sufficient development of joint strength.

(6) Machining or surfacing of joint before full development of joint strength and equilibrium moisture content of joint have been attained.

(7) Improper glue solution for specific assembly.

If the proper glue has been selected and is used under good conditions—room temperature, etc., the adhesive will provide:

(a) Adequate wetting-out of the wood surface.

(b) Proper transfer of glue applied to the one side of the joint to the adjacent face after pressure is applied.

(c) A tacky, slightly stringy glue film at the joint just as pressure is to be applied.

(d) Extrusion of a small amount of tacky, fairly heavy-bodied excess glue from the joint as pressure is applied.

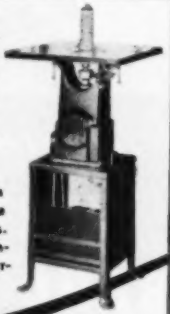
If the glue is too heavy, imperfect results under (a) and (b) will be found. If excessive glue is extruded under (d) excess glue was applied to the joint, or the glue solution is too thin, or pressure is being applied too soon. If relatively no glue is extruded under (d), insufficient glue was applied or the glue was chilled or dried before application of pressure. "Starved," "chilled" and "dried" joints may be eliminated through proper variation in glue concentration and gluing technique to insure the condition under (c).

All animal glue manufacturers and suppliers are in a position to offer more detailed information and technical service concerning the use of animal glue as an adhesive, and with particular reference to its use in woodworking to those who are interested.

The End

A Rapid Production Spindle Sander-Grinder for as Little as $165.00!

All the important features of high — priced machines. Compact, portable, rugged. Sands wood and does internal and external grinding of plastics and metals up to 6" thick. Contours as sharp as ½" radius, (with special equipment, down to ⅛" radius). Bevels 0 to 45°. Table, 20" x 20", tilts 45° two ways for beveling, drafting patterns and corebox work. Handles 1", 1½", 2" and 3" abrasive sleeves. Drum, 9" long, (6" above table) oscillates with ⅜" stroke. Sands silky smooth even with the coarse, faster-cutting, longer-lived abrasives. Rotating parts run in oil bath. Oscillating mechanism mounted on precision ball-bearings. Vibrationless.



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Top speed is sustained for free, steady cutting. 7200 r.p.m. models, powered with 1750 r.p.m. high torque motors up to 1½ h.p., which out-pull and out-perform any others. 10,000 r.p.m. models, powered with 3600 r.p.m. motors. Opposite hand models in pairs, priced far under average double-spindle shapers.

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The only shaper having ½" and ¾" cutting arbors formed on a solid precision-ground, one-piece spindle. Safer than any two-piece type. Arbor size changed by merely inverting quill. Cutter capacity up to 6¼" dia. x 3" wide. The strong 1" dia. spindle and large table opening, which provides for nested table rings, permits "under-cutting" setups, with any cutters up to 6¼" dia. lowered below the table and under the stock for far greater safety. Vertical spindle travel, 1¾". Improved guard and work hold-down. Table (has mitre-gauge groove), 20" x 27½". With front wing, 28" x 27½". Floor to table, 35".

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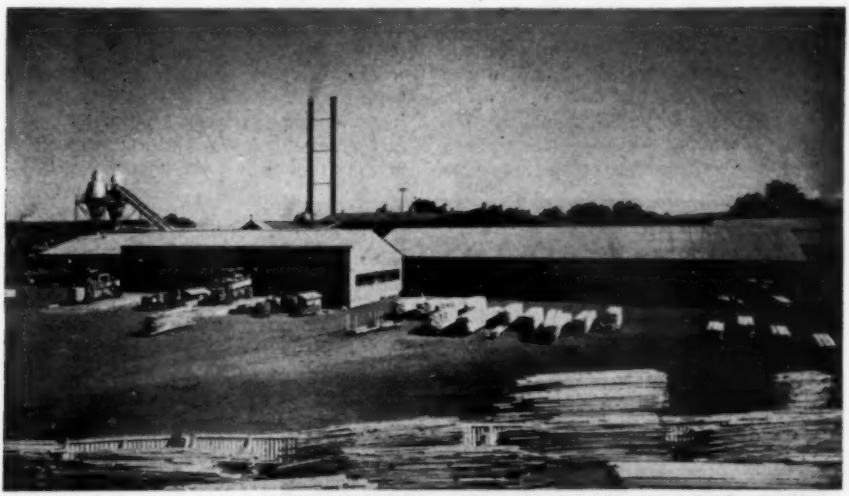
Cascade Lumber Company
Modernizes Its Planing Mill

OUT in the West where the ponderosa pine grows tall and sturdy, the Cascade Lumber Company of Yakima, Washington, has been producing some very superior millwork. However, the day came—as it should with any forward-looking company, when it seemed necessary to look over their equipment with an eye toward speeding production through more modern and efficient machines.

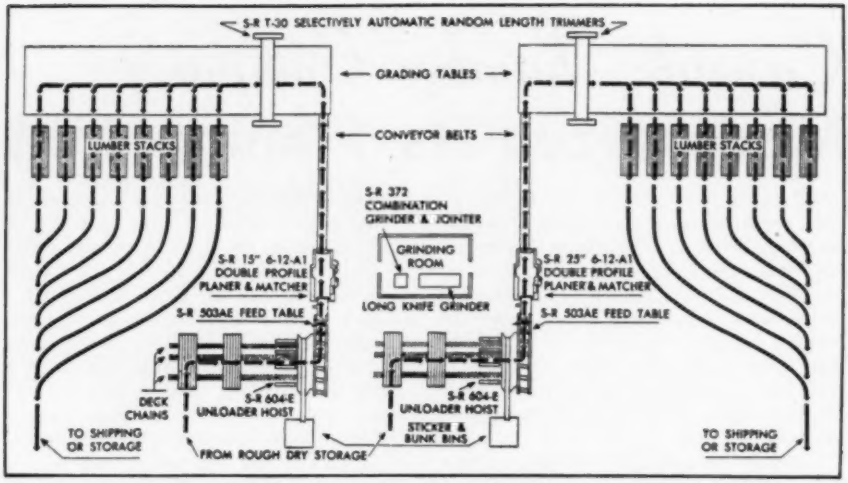
Lumber planing and handling problems have been under constant discussion by millmen, engineers and students of the wood-processing industries. Discovering an efficient flow of work for production is the beginning of an improvement program. Many of our woodworking machinery manufacturers have engineers who can help a wood products manufacturer in making such a study.

In this instance the Cascade Company turned to a Seattle manufacturer, the Stetson-Ross Machine Company. Peter Koch, an engineer for Stetson-Ross, has spent considerable time in this sort of work and has also presented papers on the subject before A.S.M.E. meetings. He says that the non-uniformity of the structure of wood is one of the important factors to consider.

"In addition to this non-uniformity of the structure of wood, the manufacture of lumber is further complicated by the multiplicity of shapes and sizes



Overall view of the new T-shaped building, which houses the 15" 6-12-Al planer and matcher with its accompanying trimmer on the left, and the 25" 6-12-Al planer and matcher and double profiler with its accompanying trimmer on the right. The shaving collectors are visible on the left, and the powerhouse stacks can be seen in the far background.



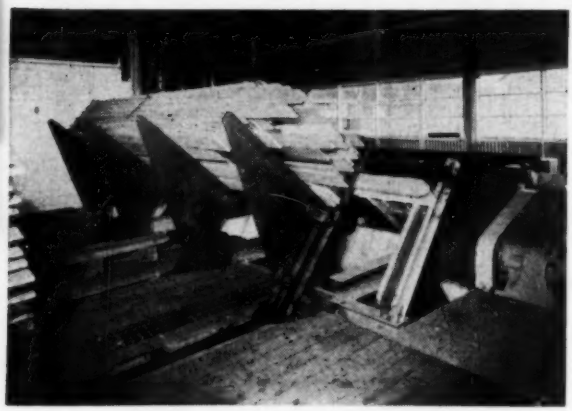
This chart is self-explanatory, being the floor plan of the machines installed.

to which the end product must be machined. A further complexity . . . is introduced because of the variations in moisture content demanded by various end uses of the finished lumber product."

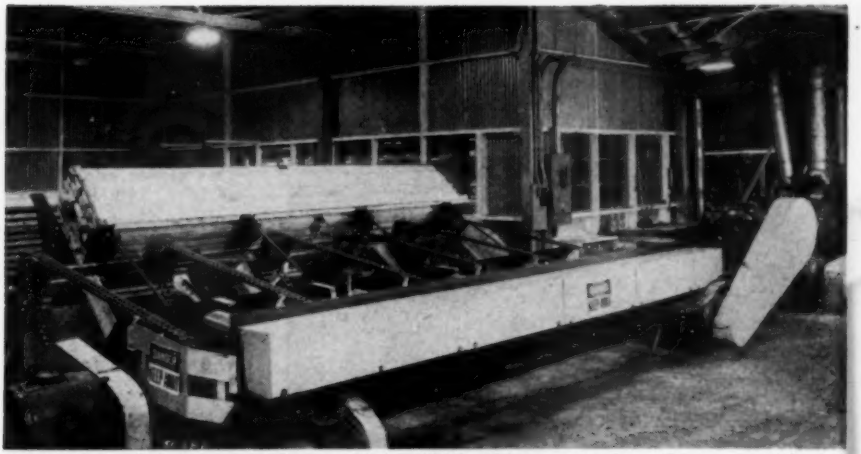
After sufficient study of the products manufactured by Cascade, this plan was decided upon and is now in use. In planning the new plant capacity, the objective was to increase the output, but reduce the number of machines required, and by so doing reduce the attendant multiple maintenance, space and crew expense.

By means of the pictures which appear in this story and by consulting the floor plan, our readers can see the planing mill at work.

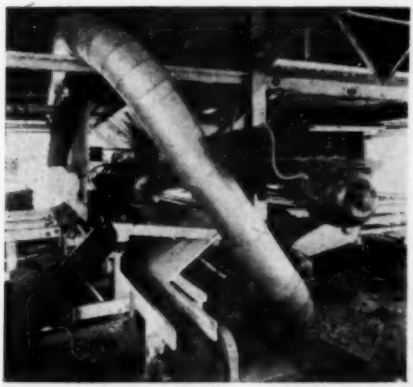
The Cascade Lumber Company has been operating this new equipment for just about a year now with very satisfactory results. We are told that they are producing 50% more surfaced lum-



Stetson-Ross tilting unloader hoist, showing the manner in which the bunks and sticks fall into a trough under the feed table for automatic removal.



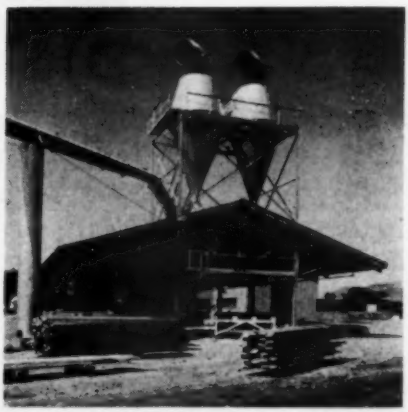
Deck chain fed four-arm Stetson-Ross 604E tilting unloader tilting a stickered pine load for delivery via 503AE feed table to the 15" 6-12-Al double profile planer and matcher. Sticks and bunks are automatically removed by conveyor below floor level. Note individually variable speed feed motors on feed table and planer.



T-30 random length selectively automatic trimmer following the 25" 6-12-Al planer, matcher and double profiler. Note blowpiping from both above and below each saw unit and waste disposal belt in the foreground.

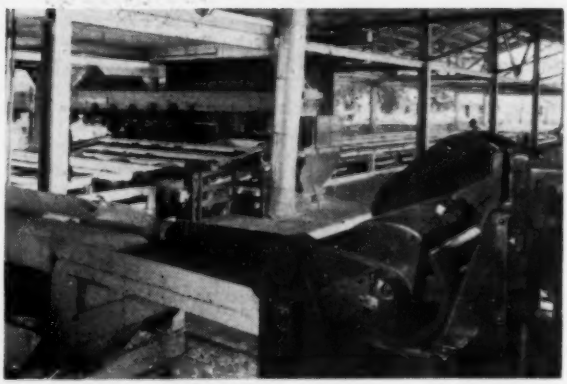
ber than they did previously. Only about two-thirds of the number of men formerly required are needed in this new setup.

This story of American enterprise illustrates again the value of not being satisfied with a process or machine until we know it is the best available. The Cascade Lumber Company will soon, if not already, have paid for the cost of their new equipment and can look forward to profitable production for a long time to come.



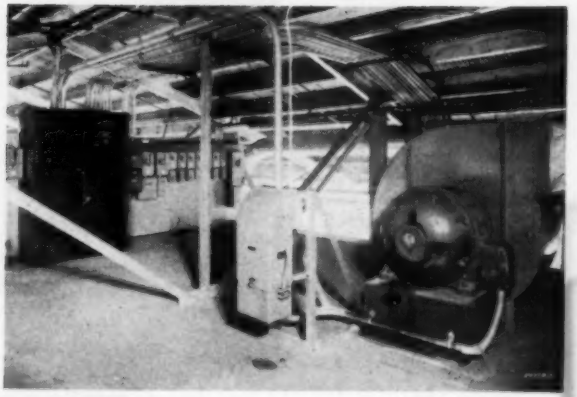
Individual dust collectors are installed for each of the two machines. The blowpipe in the foreground leads to the powerhouse.

Stetson-Ross 604E tilting unloader feeding packages to the 503AE feed table, which in turn will feed the 25" 6-12-Al planer and matcher. This planer and matcher is a 296 h.p., 12-knife planer, matcher and double profiler capable of eased edge splitting, for feed speeds up to 480 feet per minute, and a rated daily output per shift of 60M to 150M board feet.

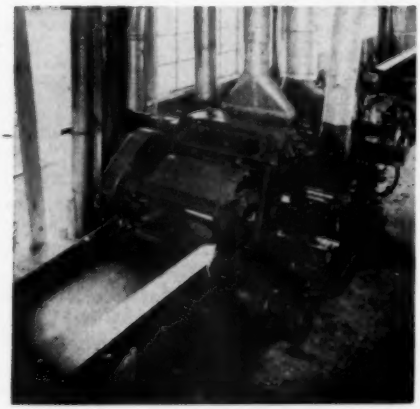


View over the outfeed end of the 25" 6-12-Al toward the T-30 random length selective trimmer. Grading chain for this machine is visible in the far background.

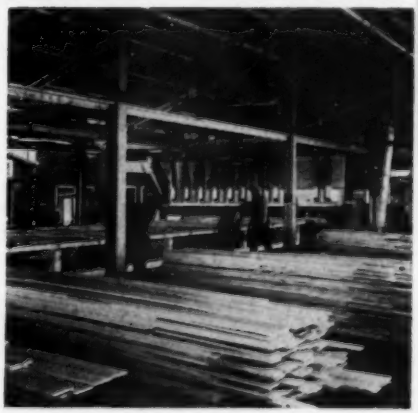
The selectively automatic T-30 random length trimmer double end trims every board. For directing intermediate cuts the operator's station is equipped with electric selective fingertip controls. The four cams in the foreground rise and fall rhythmically, and are timed to feed chain lugs to permit rapid feeding.



One of the two duplicate fan installations, each fan handling one of the matchers and its associated trimmer. Note neat control panel layout in the background.

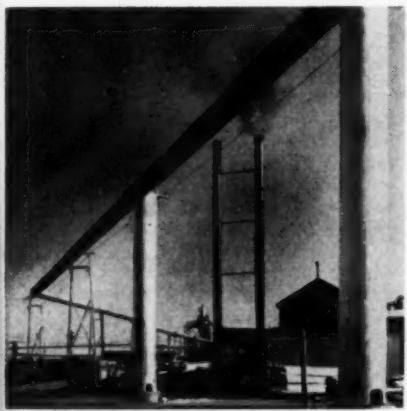


Double profile 25" x 8" 12-knife 6-12-A1 planer and matcher, with push-button controlled motorized adjustment of top feed rolls, cutterheads and outside sidehead. All profile grinding and finish jointing is done in the grinding room prior to the production run. Bunk and sticker conveyor are visible in the background.



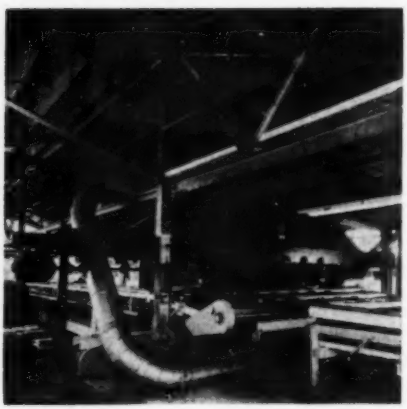
View over grading chain of T-30 random length trimmer which is blowpiped from both below and behind each saw unit. Grader in background grades from a 15" 6-12-A1 matcher. Sorters pull lumber over edge rolls of grading chain into grading packages.

Exhaust point for the conveyor belt running underneath the tilting unloader. Bunks and stickers are separated at this point.



Blowpipe conveying shavings from the two matchers to the powerhouse.

View from inside of one of the T-30 random length electric selective trimmers, showing the blowpipe manifold.



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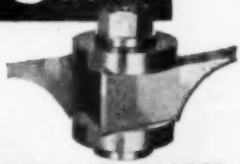

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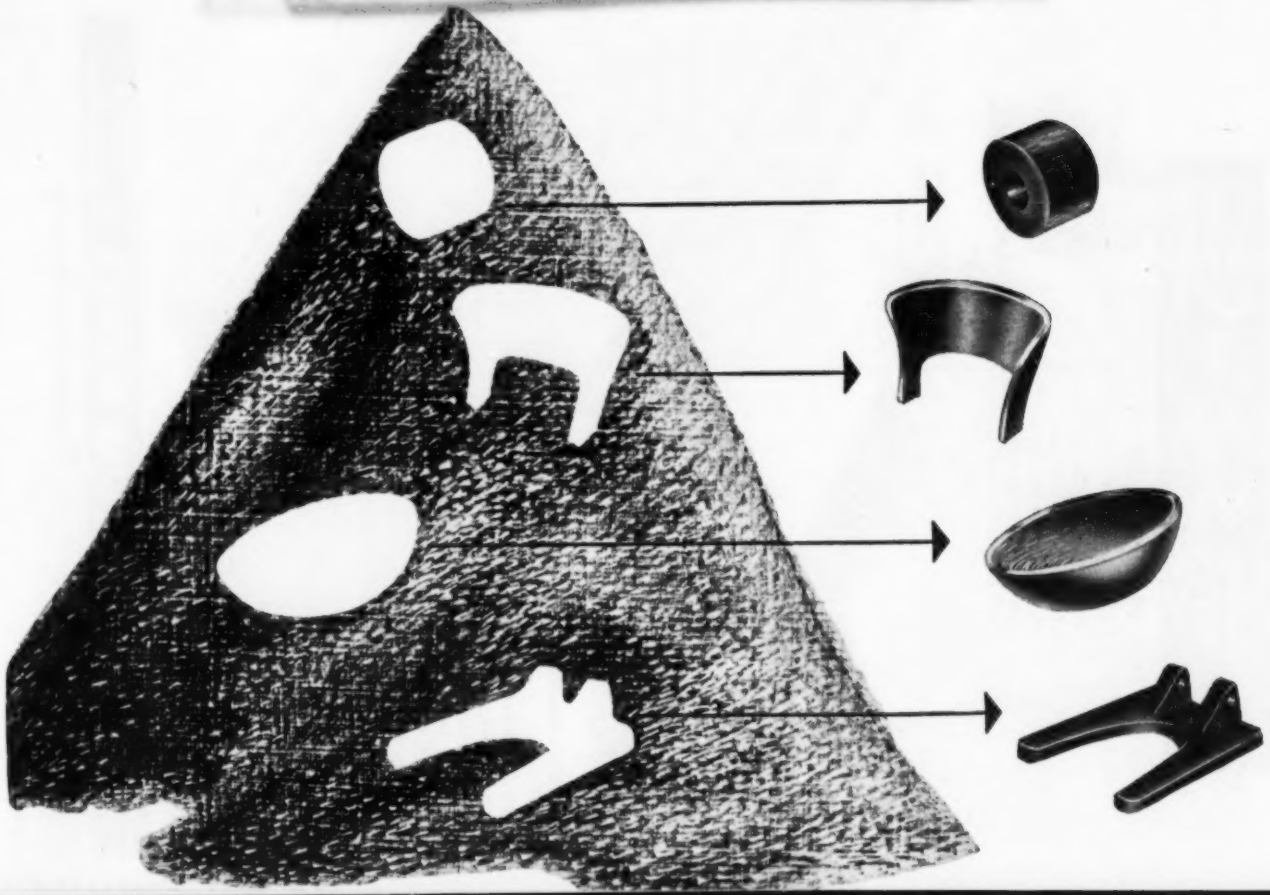

LAUXITE UF-71 uncovers hidden profits in molded wood

You'd say it was a mighty good trick if you were able to turn wood waste into dollars.

Today, management is finding a way to increase profit . . . by bonding granulated wood into molded shapes with Monsanto's Lauxite UF-71, a powdered urea resin.

Just a few of the products already being "molded" with Lauxite UF-71 include chair backs and seats . . . knobs . . . wheels . . . bases for parts and instruments . . . hamper tops . . . toys . . . sporting equipment . . . and high-style wooden housewares.

Either hardwood or softwood chips, sawdust, shavings, etc., can be used. And, in addition to Lauxite UF-71, Monsanto has both powder and liquid phenolics for bonding.

For more information on how you can turn wood waste into dollars, send for Monsanto's booklet, "Bonding Granulated Wood With Powdered Resins." Address: MONSANTO CHEMICAL COMPANY, Plastics Division, Room 5308, Springfield 2, Mass. West of the Rockies, please address inquiries to: MONSANTO CHEMICAL COMPANY, 911 Western Avenue, Seattle 4, Washington. (Monsanto in Canada: Montreal.) Lauxite: Reg. U. S. Pat. Off.

One of the big MONSANTO family of adhesives

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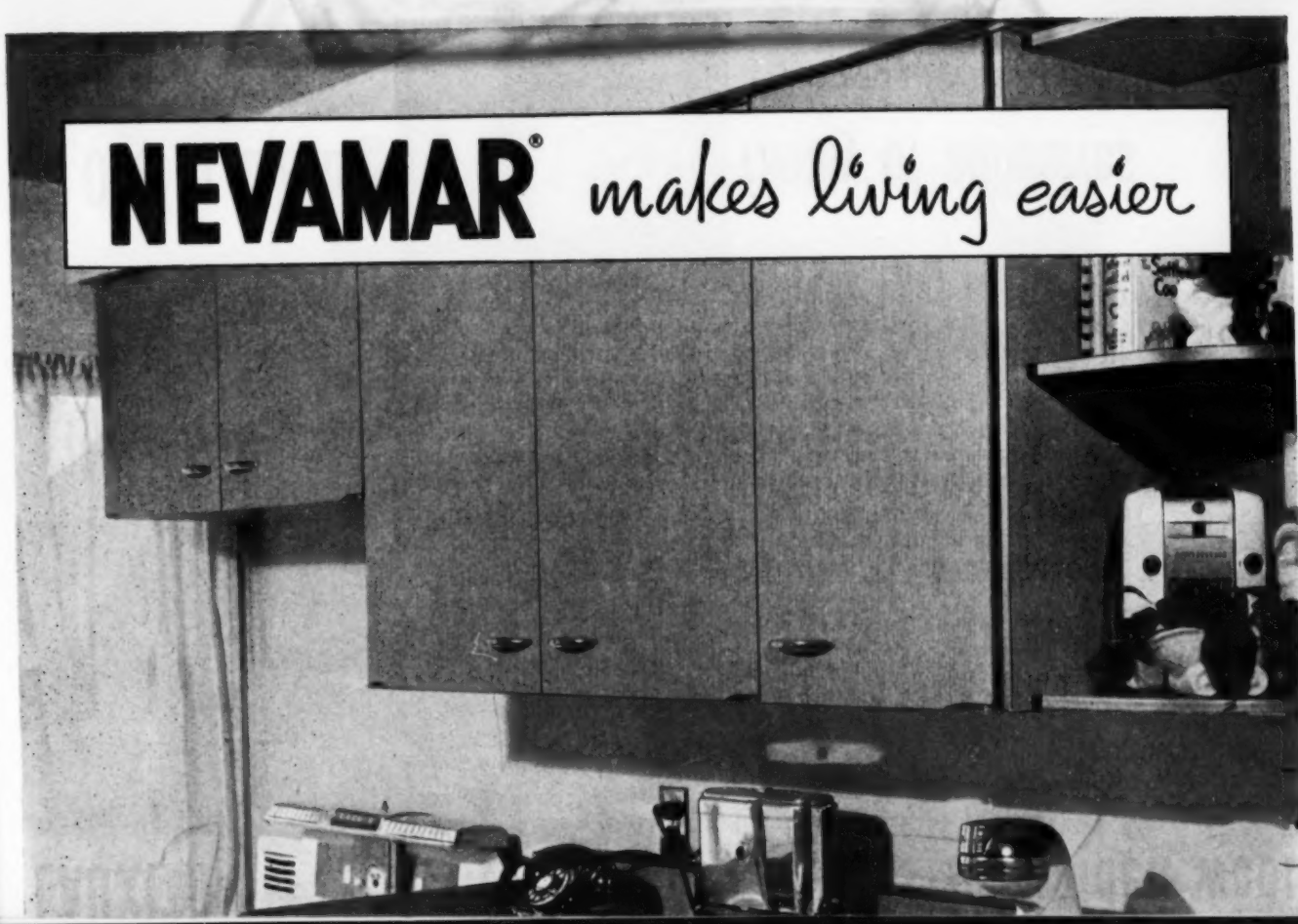
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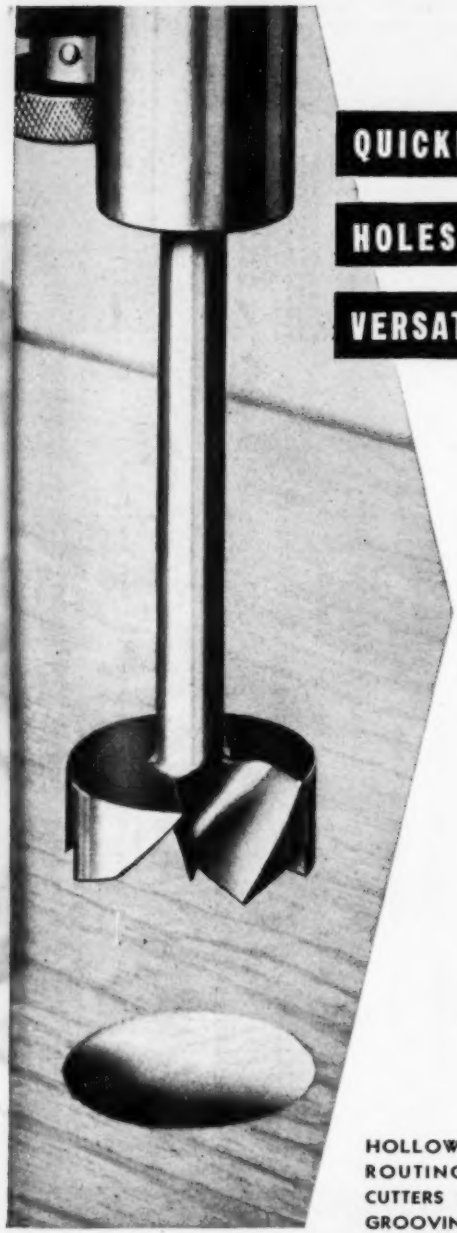

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GROOVING TOOLS FOR TIMBER CONSTRUCTION

Know your wood

DOGWOOD

By Ned Bailey

I WAS prompted to select this species for this month because of the beauty and color it brings to most of the country at this time of the year. The dogwood has finished blooming in the southern parts of its range in both the southeastern and southwestern parts of the country, but is still flowering in its northern habitat.

Known best for its showy blossoms, the small, irregular crown of slender spreading branches of the flowering species (Cornus florida, Linnaeus), the brilliant, scarlet autumn foliage and highly specialized commercial uses of its wood, combine to make flowering dogwood, a tree to be remembered.

There are two species in the country, the flowering dogwood which ranges from central Florida to eastern Texas and northward through the Mississippi valley and southern Appalachians to southern Wisconsin, Michigan, lower Ontario, central New York and southern Maine. It is also found on the uplands of northern Mexico.

The other species, Pacific dogwood (Cornus nuttalli, Audubon), is found from the southern coast of British Columbia, the lower Fraser river valley and Vancouver Island southward through western Washington and Oregon and in California on the coast ranges to the San Bernadino mountains and on the western slopes of the Sierra Nevada up to altitudes of 5000 feet.

Both the flowering and Pacific dogwood are slow growing and live a long time. The flowering variety usually occupies the margins of open woodland. Rarely, except in the south central states where it seems to thrive best, does it approach the conditions of a pure stand. It prefers rich, well drained soils in covers or along the banks of streams.

An opposite branching tree, the bright green simple leaves of flowering dogwood are ovate to elliptical and sharply pointed, three to six inches long. In the autumn the upper surface turns bright scarlet.

Large white, pink and occasionally rose red blooms appear in late April through June, with the opening of the first green leaves. One of the interesting things about dogwood is that the true flowers are inconspicuous yellow-green and perfect. They form a dense cluster in the center of what is usually mistaken for the blossom. What appear to be four large petals with deeply notched tips are actually bracts or a form of leaf.

As the name indicates, flowering dogwood gets its name from the profusion of spring flowers and for the same

reason bears the Latin name, florida. Cornus is derived from the Latin word for horn and refers to the hard, tough wood. Cornus florida is the most important of about 50 species of shrubs and small trees in the dogwood family. Seventeen are native to North America.

The fruits of flowering dogwood are often found in clusters, each one being small, egg-shaped and scarlet with a single hard, red seed. They ripen in October and are, along with the bright scarlet leaves, only a little less showy than the blossom.

In winter the red terminal buds are like flattened cones and are generally downy near the point. The flower buds are turnip shaped, about a quarter of an inch long and broad. They are always terminal and frequently very numerous. The smooth, slender twigs are yellowish green or bright red and are bitter to the taste.

The bark is very interesting in that it is dark red-brown to almost black and broken into four sided or rounded scales not unlike alligator hide. It is about an eighth to a quarter inch thick and with root bark has been used as a source of a bitter element for the treatment of fevers. The Indians also derived a form of scarlet for dyeing their blankets, feathers and belts.

The sapwood is pinkish and the heartwood reddish brown to light chocolate in color. Its fine, uniform texture and narrow annual growth rings produce firm, stiff wood weighing about 51 pounds to the cubic foot when air dry. Most of the dogwood cut for commercial use is made into shuttles for textile weaving, because the hard, close-textured, smooth wood has little wearing effect on the thread. For the same reason it is also used for spool and bobbin heads, small pulleys, skewers, golf club heads, mallet heads and jeweler's blocks.

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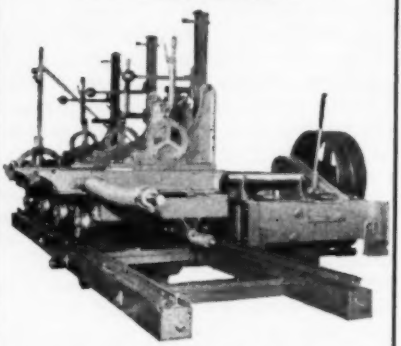

THE ENTERPRISE COMPANY
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PITTSBURGH
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Dogwood reproduces from seeds, which are borne nearly every year, it also sprouts from the root collar and may be successfully grafted. I can say from first-hand knowledge, as we have a flowering dogwood on our place in Arkansas, that it is one of the most satisfactory year round decorative trees available. Not only does it lend beauty to the landscape from its flowering time in April, but through the summer its bright green leaves are always fresh looking. In the fall, the leaves and fruit all turn a bright scarlet. The birds of the hard-bill species find the fruit most attractive. The flowering dogwood seldom grows more than 40 feet tall and has a rather irregular shape.

Pacific dogwood resembles its eastern relative in most respects. The most conspicuous difference between them is the petal-like scales which surround the flower clusters. In the flowering dogwood these scales are notched at the ends while in the Pacific species they are not. Also the Pacific species flowers a second time in late summer when the fruit produced by the first flowers is turning red. Also the flowers are inclined to grow in clusters. These Pacific coast dogwoods grow to 25 or 30 feet high with straighter trunks and a more conical shape.

The bark of the Pacific dogwood differs also in that it is smooth except near the base of old trees. The heartwood and sapwood are similar to the flowering dogwood. The wood, in addition to the products made from its eastern cousin, is made into cabinet work, mauls and tool handles.

The dogwoods mature between 100 and 150 years, although their value in industry is unquestioned, they are rapidly gaining greater value as ornamental trees. With a moderate amount of care they will repay you in all year round beauty.

DEDGIE—the Planer Boss—says:

"Why not let the bull throw the politicians for a change."

That sounds like a good idea — but mills all over the U.S. will testify there's no bull about the high production and edge holding of

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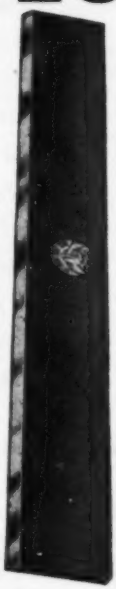

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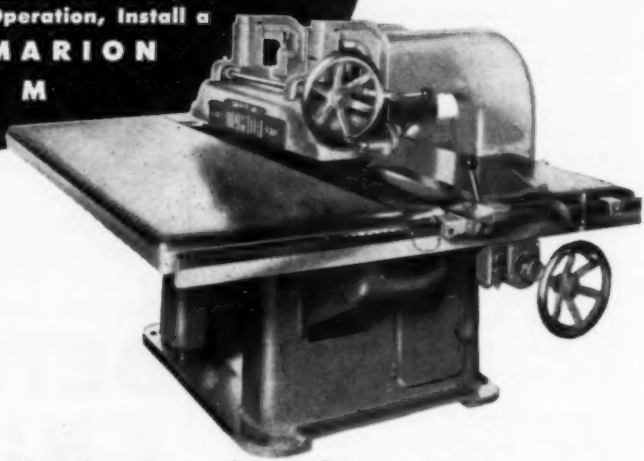
NEW MARION Model M



Here is the rip saw to do the job you want it to do in your plant — year in and year out — an advance design, performance-proven, straight line, chain feed, glue joint rip saw of the undercutting type. The new MARION MODEL M rips stock 25½" wide to the right of the saw, any width to the left, any thickness up to 4". Rips through 2" stock with a 12" saw blade; eight rates of feed, all quickly available. Standard speed range 56 to 212 feet per minute.

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Fully guarded interchangeable feed chains and chain ways of new, wear-resistant iron alloy. Automatic lubrication from large capacity oil reservoir . . . All-steel frame is heavy, rigid and practically indestructible. No sawdust accumulation inside!

Send for Circular of Full Details and Specifications

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Dept. WD6, Marion, Indiana

A MAINTENANCE PROGRAM FOR *CARBIDE CUTTING TOOLS*

Welcome news to the entire woodworking industry is this announcement of a course of training in the maintenance of carbide wood cutting tools. The course has been arranged and will be supervised by the University of Michigan and North Carolina State College with the cooperation and technical assistance of manufacturers of equipment and supplies for carbide tool maintenance.

The first two-week session of classes —run on the divided plan of classroom and laboratory work—will be held early in September at North Carolina State College. Instructors will be regular faculty members, plus engineers, technicians and specialists in various operations. The course has been carefully planned to give complete and adequate training to each student.

The equipment will include not just one type of machine from one manufacturer, but the latest and most efficient models of all makes of machines designed to grind and sharpen carbide wood cutting saws, groovers, knives, straight, form and milled-to-pattern bits and router bits. These machines will be provided by manufacturers participating in this program.

Need for the Course

The introduction of tungsten carbide as a cutting tool for wood increased the productivities of woodworking machines and their auxiliary equipment. It was natural to assume that such increased productivity would create a need for adequate maintenance equipment and trained personnel to maintain these carbide tools.

To verify this assumption, an industry survey was made. The returns were definite proof of the immediate need for efficient maintenance grinding equipment with competent personnel trained to operate the grinders and maintain the productivity of these carbide tools at their peak. A number of individuals, firms and associations recognized that the solution to this problem should be developed on an industry-wide basis. Various discussions and exchange of past experiences lead to a generally accepted possible solution. It was believed that the diversity of applications, scarcity of adequate maintenance techniques indicated that the most satisfactory results would be obtained from a classroom-work laboratory type of presentation. With this idea in mind, it was believed that such an industry-wide program could best be prepared and presented in cooperation with technical or engineering colleges or universities. Schools now offering work in the wood industry were considered to be best prepared to supervise this program.

This problem and its possible solution were taken to North Carolina State College and the University of Michigan. After discussion of the problem with departmental heads of both schools, they agreed to present such a course for men in the wood industry, providing manufacturers and fabricators of machines, tools and supplies would cooperate in building a unified course.

Organizing the Program

With a sincere belief that manufacturers as a whole would be most willing to cooperate and participate in a definite program of this type, the first contacts were made early this spring. By May 1, sufficient equipment, tools and supplies had been promised by various firms to assure the success of the program.

Three or more trade associations have acknowledged the need for such a

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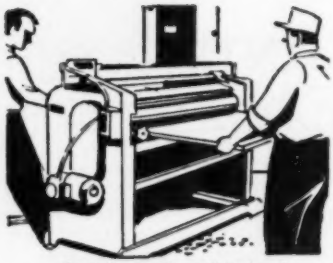

Spreads equally well by hand or mechanical spreader.

The ALL-PURPOSE qualities of Cellument make it the perfect adhesive for a wide variety of applications. It works equally well for hot press (including electronic) and cold bonding on a wide variety of materials.*

CELLUMENT comes to you as a DRY powder with incorporated catalyst ready to be dissolved in water. (You don't pay transportation on water. Dry Cellument can be stored longer in less space.) It dissolves in water instantly, sets quickly and spreads fast and easily with mechanical spreader or by hand. Extenders may be added. Hot press bonds with unextended Cellument are strong, fungus and water resistant.

Ask for your copy of the booklet "The First Pair of Skis", by H. L. Prestholdt, Pres.

***It is excellent for gluing any make of plastic to wood. For instance, the Buckstaff Company recommends it for gluing their resylite to plywood.*

Cellument is another MONITE product formulated especially for industry. Behind it stands 35 years of research and development.

Write TODAY for FREE SAMPLE for test in your plant.

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training and several firm members are actively participating in its formation. Technical groups are supporting and cooperating in every way possible. The Forest Products Research Society, through its committee on wood machining, is especially interested in this program.

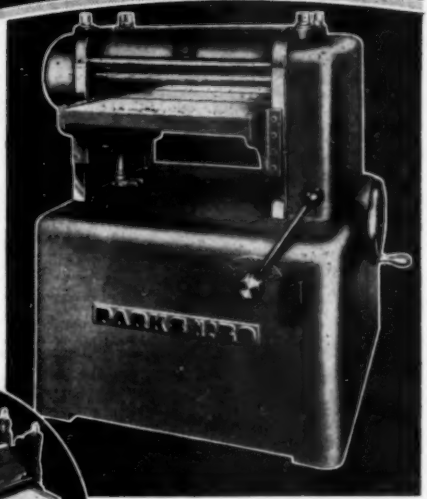
This two week course will be offered to men of the wood industry from plants who are now using or plan to use carbide wood cutting tools. It is planned to present the first course at North Carolina State College at Raleigh, N. C., early in September, 1952. The second course will be presented at a later date at the University of Michigan. Subsequent courses will be presented as frequently as the demand requires. This course will be presented as part of the regular woodworking plant maintenance course during the regular school year for all students taking courses in wood fabricating.

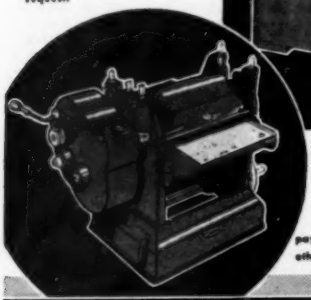
PARKS PLANERS

20" THICKNESS PLANER

The Parks No. 20

A modernly designed, low-priced, high-speed 20" x 6" planer that meets the surfacing needs of every type of woodworking shop. Ruggedly built for vibrationless operation—assuring quality work, increased production and low operating costs. Provides two feed speeds —20 and 40 F. P. M. and 40 and 80 F. P. M. Four-knife cutterhead has speed of 3600 R. P. M. Complete descriptive literature on request.





12" THICKNESS PLANER

A compact, sturdy machine that offers mill planer precision and ruggedness at a sensationally low price. A real heavy-duty 12" x 4" planer that can pay for itself in savings effected through the salvage of otherwise waste stock. Write for descriptive catalog sheet.

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Maintenance techniques will be emphasized, not tool manufacturing procedures!

Men who have been trained in these courses should be competent to maintain carbide wood cutting tools, as well as supervise installation of centralized carbide tool control.

As a sequel to this program, it is planned to present similar training on selection of applications and operation of these productive tools. It is the sincere belief of many individuals in the industry that these two courses will contribute much to improving the efficiency and economy of these valuable production tools.

Additional information about the course is available from Prof. L. A. Patronsky, University of Michigan, Ann Arbor, Mich., or Prof. E. Sigurd Johnson, North Carolina State College, Raleigh, N. C.

An advertisement appears in this

Pheoll
WOOD SCREWS
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● Join Parts Better
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Other Typical Pheoll Products
Machine Screws, Tapping Screws, Cap Screws, Set Screws, Stove Bolts, Machine Bolts, Machine Screw Nuts, Phillips Recessed Head Screws and Bolts, Sems (Lock Washer Screws), Special Cold Headed and Threaded Products.
Use of Pheoll standard and special wood screws reduces overall assembly time and provides the means for joining parts tighter and stronger. Also, they improve the final appearance of your products.
These quality screws are made from cold forged blanks—individually turned, providing clean cutting edges free from nicks and burrs. The sharp gimlet-type point penetrates the wood for a straight and rapid driving start. Spiral threads seat firmly in the wood, providing a rigid bond that resists strain and vibration. Pheoll wood screws are available in slotted or Phillips recessed head types—in a broad range of sizes—all head styles, different metals and in all finishes. Ample stocks of steel and brass wood screws are always carried in stock.
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issue announcing this maintenance program. The firms participating and cooperating in this initial effort are: E. C. Atkins & Co., Big Four Carbide Tool Co., Carborundum Co., Delta Power Tool Div., DeLuxe Saw & Tool Co., G. M. Diehl Machine Works, Henry Disston & Sons, Drake Corporation, Ekstrom, Carlson & Co., Firth Sterling Steel & Carbide Corp., Hanchett Mfg. Co., Huther Bros. Saw Mfg. Co., Norton Co., Redco Tool Div., Samuel C. Rogers & Co., Wisconsin Knife Works and Yates-American Machine Co.

BORDEN GLUING BULLETIN

The gluing of laminated wood keels, ribs and other boat timbers for Navy use is analyzed in a special eight-page bulletin offered by the Borden Company's Chemical Division. Reviewing all phases of marine service gluing to military specifications with Cascophen resin glues, the booklet also con-

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tains a "trouble shooting" guide that helps correct possible faulty gluing procedures. Accompanying the booklet are data sheets on Borden resin glues approved for marine laminations. Bulletin 87 is available on request to the Borden Company, Chemical Division, 350 Madison Avenue, New York 17, N.Y.

A Communist is a fellow who takes your pot to cook your goose in.

WESTERN PINE PUBLICATION

The Western Pine Association, 510 Yeon Building, Portland 4, Oregon, has announced standardization of 114 casing and base moulding patterns under the nomenclature of the WP series.

A new 16-page publication, "Western Pine Moulding Patterns" (No. G-22), illustrates each of the new patterns in full size details.

Single copies of the new publication are available without charge.

WILLSON
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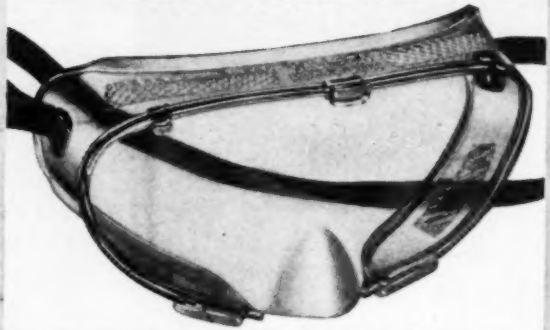

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CLEANING SOLUTION

A new and economical anti-fogging and lens cleaning solution has been developed for use on glass or plastic surfaces such as eye glasses, face shields, goggles, etc. The invisible coating is non-streaking and resists the formation of fog, or steam caused by humidity, body heat or temperature changes, we are told.

Called No-Mist, one application of the liquid willl provide anti-fog protection for 24 hours. It may be applied by hand or sprayer and is available in 8 ounce glass or plastic bottles from Carol Chemical Products Corp., 368 E. 45th St., Brooklyn, N. Y.

Population experts estimate 40,700 married couples by 1960, as compared with 35,600 for 1950—the family formation rate curving sharply upward when the big boom of World War II babies start reaching marriageable age brackets.

Is AN ACCIDENT-FREE RECORD *Possible?*

Note: A series of 18 questions were sent to panel participants prior to the meeting. The most widely applicable answers were chosen and presented at this session of the 1951 National Safety Congress. The first eight questions and answers appeared in the May issue of WOOD WORKING DIGEST.

Participants:

R. E. Johnson, Personnel Supvr., Kroehler Mfg. Co., Bradley, Ill.
Kenneth C. Neils, Safety Dir., J. Neils Lumber Co., Libby, Mont.
L. R. Schoenig, Safety Dir., Curtis Co. Inc., Clinton, Iowa.

Q. 9. Is there a relationship between piece work and increased accidents?

A.—Schoenig: We do not have piece work in our plant but the question implies that an increase of production may cause increased accidents. I'm sure that it has been proved and is a matter of record that with proper instruction and adequate supervision the quickest way to do a job is the safe way.

Q. 10. How do you maintain interest in safety?

A.—Schoenig: We use a safety award plan; safety bulletins; posters; safety meetings; moving pictures; a first aid dept. with a registered nurse in attendance at all times, also a white elephant as a departmental booby prize.

Q. 11. What training aids do you use to teach safety?

A.—Johnson: Slides and movies; bulletin boards; inter-plant safety contest; annual awards; visual display board; house organ; Hopalong Casualty character; foremen's quarterly safety meeting conducted by our insurance carrier; foremen's weekly conference; bi-monthly safety meetings.

Q. 12. What specific hazards have been eliminated as a part of your safety program?

A.—Schoenig: Eye injuries have been greatly reduced through our safety glasses program. Poor housekeeping is a thing of the past and infections have been reduced to a minimum by requiring all injured persons to go to first aid at once.

Q. 13. How do you get guards used on machinery?

A.—Johnson: These are "musts" in our plant at Kankakee. The superintendent checks with the foremen and our employees give us good cooperation. We

Reduce Costs by assembling your products easier and stronger with "Rockford" Quality Controlled Threaded Fasteners.
We manufacture a complete line.
Cap and Set Screws
Socket Head Cap and
Socket Set Screws
Studs
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"ROCKFORD"
Screw Products Co.
2501 S. Ninth Street
ROCKFORD, ILLINOIS
Phone: 4-9441 or Teletype: RK 88

appeal to the employees on the basis of our safety record and the inter-plant competition.

Q. 14. Which is the best method to use in teaching safety—a positive approach? A negative approach?

A.—Schoenig: Always a positive approach.

Q. 15. How does management look at safety—(a) As a humanitarian program? (b) As a public relations program? (c) As a method of cutting costs? (d) As an employee relations program? (e) Other?

A.—Johnson: Your a,b,c,d, items are all included, and in addition there is the item of production as well as employment and family welfare.

A.—Schoenig: The management of Curtis Companies looks at safety through all these channels.

A.—Neils: Management must look at safety as a method of cutting cost. It also (as humans) must look at it from the humanitarian point with public relations and employee relations accepted as part of the program. But with Social Security and compensation laws as they are today, there is little need for safety departments to make management aware of the implications. Accidents cost money, money which management would realize as profits if no accidents occurred.

Q. 16. What National Safety Council materials do you use in your safety program and which have proved to be the most effective?

A.—Johnson: "Safety in Foremanship" series of booklets; bulletin board service; "Safe Driver" series of booklets; data sheets; safety instruction cards. Probably the most widely effective material is the bulletin board service—large posters.

A.—Schoenig: The posters of course reach every individual with their unusual safety messages. We've also availed ourselves the use of the many fine slide films and information supplied by the engineering dept. of the National Safety Council.

A.—Neils: The woodworking industry is unique in that its handling methods are far different than most other industries. Packaged products are few; small item handling is minor. Machines, methods, etc., all create problems for the safety departments which make generalities difficult. Some materials of the National Safety Council are good and are used. Much more can be done, (this is speaking for the woodworking industry only). Different posters, first aid kits adapted to individual needs (such as sawyers, cruisers), etc., National Safety Council bulletins are helpful; technical data on handling methods help on new problems, literature on new products for care of injuries without the necessary "boning up" which would otherwise be required.

Q. 17. What materials can the N.S.C. furnish you to do the job better?

A—Johnson: Do not know.

A.—Schoenig: When we know of all the fine helps and materials that are now being provided we might ask, "Could there be anything else?" yet we know that new materials and methods are constantly being developed to promote the interests of safety. The National Safety Council is performing its greatest service to our safety program by keeping us informed, as it is now doing of these advancements. This Congress which we are now enjoying is one of the finest sources for obtaining this information and we look forward to attending each year.

A.—Neils: The National Safety Council would provide the wood industry invaluable service if it had a counselling service made up of a board which would give immedate answer to specific problems presented by safety inspectors and engineers for its consideration. Many problems confronting these engineers and inspectors may have been solved many times before by others and the N. S. C. could provide the medium where-by this information could be spread around.

Q. 18. You have been selected for the panel because of your outstanding plant safety record. What are your comments as to the cost versus savings of a program of this nature?

A.—Johnson: We are checking into the costs and will let you know later.

A. Schoenig: From a common sense standpoint the gains experienced from a good safety program are so great that the cost is forgotten. From a dollars and cents view one disabling injury could well cost more than the amount spent for the promotion of safety in a whole year. The Curtis Companies do not

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consider that safety costs, but rather that safety pays.

A.—Neils: The cost versus savings of a safety program is the factor which allows the safety program of the J. Neils Lumber Company to function. No operation which produces a deficit is allowed to function. The safety program must pay off. Within the last month, two deaths and three possible major injuries have been prevented by hard hats. With a total investment of less than one thousand dollars the prevention of the two deaths alone saved the company at least $25,000.00 in actual payment of cash. The injuries would have resulted in an unknown amount. But the point to be stressed is that the investment proved itself. All other expenditures and activities must also prove themselves.

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An improved, all-plastic safety goggle is being offered by Willson Products, Inc., of Reading, Pa., manufacturers of personal safety equipment.

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How Important Is *WASH COATING?*

By H. H. Connelly

FEW furniture finishers will disagree over the importance of sanding, raising dents, removing scratches and minor repair to a piece of furniture in the white. Painstaking care at this stage will save hours of corrective work later.

Neither will you stir up heated arguments when it comes to staining. Why? Because they are two necessary steps accepted for fine furniture finishing. We accept them as standard practice in finishing and question only what color of stain will suit the buying public.

But wash coating is a knot of another shape.

This is our debarkation point between methods of finishing furniture. Up to this point we find little disagreement. Here we are throwing in an operation that, on the surface, may seem to blow money up the booth. Wash coating can be deleted from your finishing operations and you will still be able to turn out a quality product. But wait. You can save money by wash coating. "How? It will cost me the price of one man to spray the wash coat and one to sand before filling; on top of this there's the material. Where is the savings?"

You will find the savings in the operation that follows—wiping the filler—a hand operation. Today, anytime you can speed up a hand operation you're on the road to saving money.

One firm, skeptical of the labor saving advantages, was on the verge of setting the production for hand wiping filler from a small cabinet at six per hour. The wash coating was tried and the production jumped to eleven per hour. As the crew consisted of six men, this was a gain of thirty cabinets per hour for the crew. Counting the two who were wash coating and sanding, this left a net saving of three men. With the overhead and gain in production time, there was little doubt of the savings to be made.

A manufacturer of fine walnut ve-

neered cabinets, who prior to the installation of an overhead conveyor system had experienced no appreciable trouble, was suddenly swamped with rejected stock that showed all the symptoms of having splinters torn out, leaving pits that were not filling.

A minute inspection of all stock in the white failed to show these defects; neither were they corrected with a 10% glue size solution sprayed on before staining and filling.

Several interesting facts came to light when a comparison was made of previous methods with few defects and the conveyorized method. (1) Parts were sprayed in a horizontal plane in the old method and in a vertical plane on the conveyor. (2) Sealer was sprayed heavier in the first method without the danger of sagging, resulting in a thicker undercoat and heavier sanding after sealer. (3) Lacquer was sprayed heavier because of the same reason. (4) An experiment with jute, used to wipe off the excess filler, revealed the astonishing fact that the tow was actually creating holes by pulling out the wood fibers when wiped against the grain. Rags and waste substituted for tow caused the same trouble.

This deduction was conclusive evidence that the fault could not be correct 100% in the finishing but would require a changing of methods in the production all along the line prior to finishing. In this instance, changes were made as far back as the first operation of veneer production. The walnut veneer was being produced on a stay log at the rotary lathe. As a consequence, one side was cut considerably tighter than the other, resulting in looser grain than would have been produced on a slicer. When this veneer was matched into a panel the loose side was up on every piece, subsequently these pieces showed the defective holes.

Surprising results were obtained when a wash coat was applied after staining, however.

Wash coating reduced the torn grain rejects to 10%. This is understandable. Torn grain is a common fault of walnut, as mentioned, especially with bookmatched veneer which has alternate sheets laid with the loose grain up. In filling, the wiping action with jute is forced under the raised fibers which are lifted out bodily. Many of the small grains fill; others are too large. It is these that are difficult to finish to a high polish.

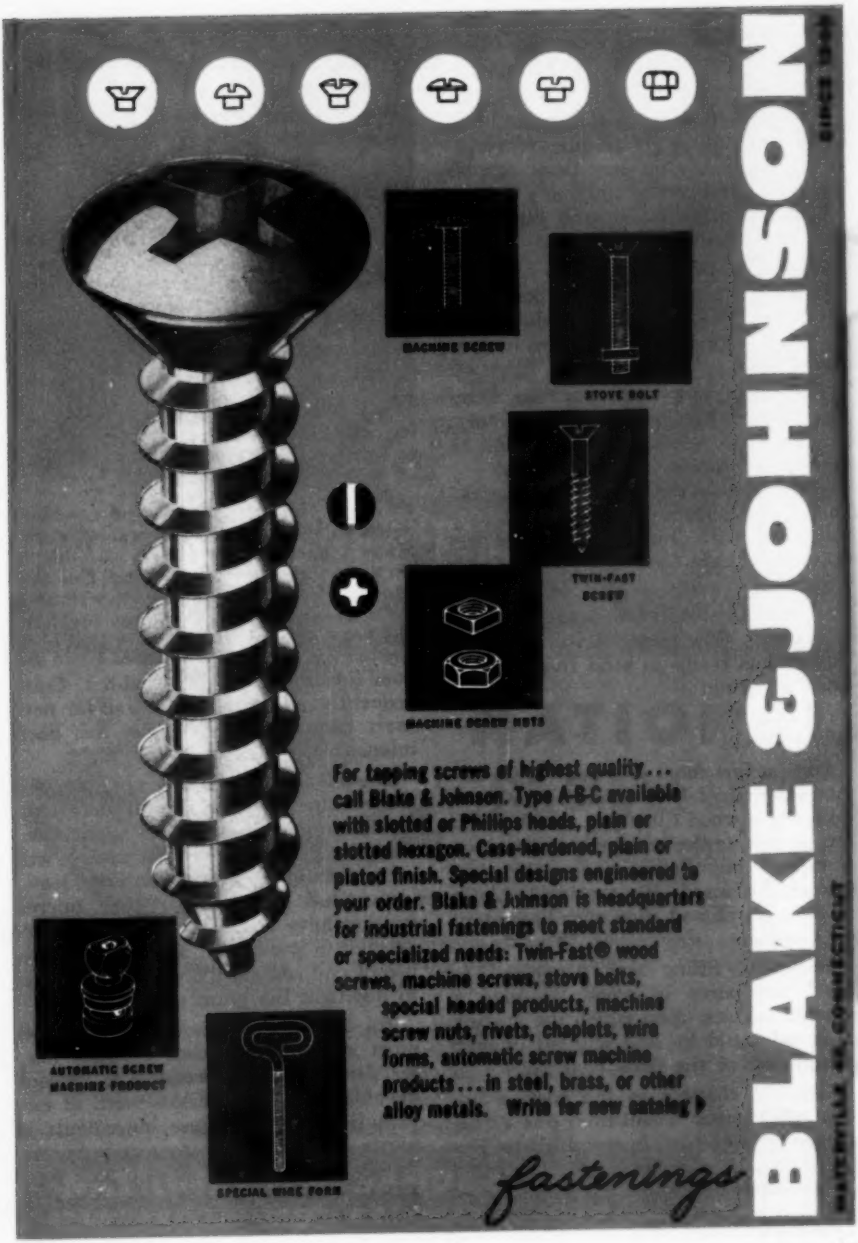
Wash coating, applied to the surface prior to filling, stiffens the fibers that were raised and waiting to be extracted by the jute. However, with a light sanding with 6/0 finishing paper following the wash coating, the fibers are clipped off leaving a smooth surface for the jute to glide over in the filler wiping operation.

Fine steel wool should be used on mouldings and irregular surfaces. Don't sand violently! Hard sanding will go through the wash coat film into the white wood.

What about color? Many concerns depend upon the pigmented filler to impart the color tone to walnut. Wash coated wood, you will find, blocks out a portion of this color penetration and will leave the wood gray when no stain is applied.

To compensate for this, you can secure a non-grain raising stain to apply ahead of the wash coating, or better still, this stain can be added directly to the wash coat, saving an extra operation.

On mahogany, a wash coat is of the utmost importance in obtaining the clear depth and transparency so essential to bring out the grain pattern. Since stain is laid on the bare wood, the wash coat will penetrate the porous wood sealing in the color; likewise, it seals that por-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tion of the thirsty wood that is most likely to absorb the pigmented fillers too heavily, causing a blotchy, unpleasant undercoat.

For wash coating you have a choice of two materials (1) lacquer sealer or (2) shellac. A wash coat from lacquer sealer is prepared by mixing one gallon of 21% solids sealer with three gallons of lacquer thinner.

Shellac is usually cut six to one with 95% methyl alcohol. If a four pound cut shellac is used the ratio should be reduced to five to one or even four to one.

The same spray gun used to spray lacquer sealer or lacquer is satisfactory. Since a large volume of material will be needed, a pressure feed tank is a time saver. Five to ten pounds tank pressure is adequate. However, gravity feed will work satisfactorily since the material is easy flowing.

In applying the wash coat, a sufficient spread should be applied to leave a wet coat. The material will dry rapidly and is ready to sand five minutes after spraying.

Wood Fillers

Until a few short years ago, little advancement had been made toward developing a wood filler that could, without stretching the imagination, be called a radical improvement over the type grandfather used. His consisted chiefly of corn starch and silex with linseed oil as a vehicle.

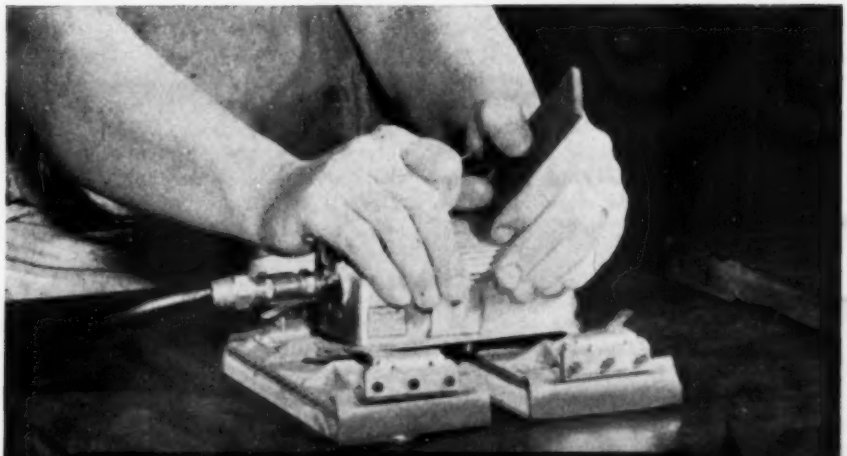
Basically, filling was developed to level the pores in wood; to give a smooth surface upon which the coating material could be laid without uneven absorption of the final coating.

Gradual changes in the coating industry through scientific research forced development in wood fillers. For one thing, it was found that solvents in new finishes failed to react favorably with known fillers, resulting in poor finishing from the wood out. Consequently, as a result, research for new inert materials and vehicles has been intensified.

A Strand flexible shaft rotary padding machine used for filling a walnut chest. Many concerns are doing a double padding with excellent results. The first padding is performed while the filler is yet fluid and the second after the filler has been allowed to flash.

The ideal filler should not only fill the minute wood pores but take care of the larger ones at one application. Without filler, uneven absorption will rapidly drain the coating material, leaving a dull dry surface. New mirror finishes have added to this importance. Further, a good filler should be translucent and contain the correct pigments to highlight the grain pattern.

To do this job satisfactorily filler must contain a number of inert materials; many are products of recent developments and merit a word of explanation. One of these ingredients is barite or baryte, a heavy spar known locally as Tiff. It is 90% to 95% pure $BaSo_4$ with not over 1% ferric oxide. Being fine-grained, the white is ex-



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cellent as paint grade. Some grades are colorless, transparent to opaque, an excellent property for wood filler. Many formulators of fillers use calcium sulphate where barytes settle too hard and where water is not a problem.

Another useful ingredient found for wood filler is china clay or kaolin, a pure form of hydrated aluminum-silicate. It is used where greater suspension properties are needed and it blends well with baryte. Magnesium silicate is often used as an inert mineral in fillers. However, ground silex is still an important material for fillers.

Finely ground silex is translucent which is an ideal characteristic for wood filler. Another outstanding property that makes silex an ideal ingredient for wood filling is its abundance. In the pure SiO_2 form and combined state it is estimated to form over 60% of the earth's crust.

In addition to being plentiful, it has the good trait of being inert when mixed with other ingredients. It dries without excessive shrinkage in the wood pores.

The second important ingredient of fillers is known as the vehicle. Probably greater advancement has been made along this phase than other new minerals of fillers.

We find the resins playing a great part. These include the natural such as congo, shellac, and manila and the synthetics—phenolic, vinyl, urea, etc. With this combination the possibilities are unlimited. A filler can be compounded that will be compatible with any known coating material.

There is this precaution in using a filler not compounded with a vehicle compatible with certain lacquer sealers. The solvents penetrate into the hardened pores and a grain puffing will occur. It is most noticeable soon after applying the sealer and to some extent

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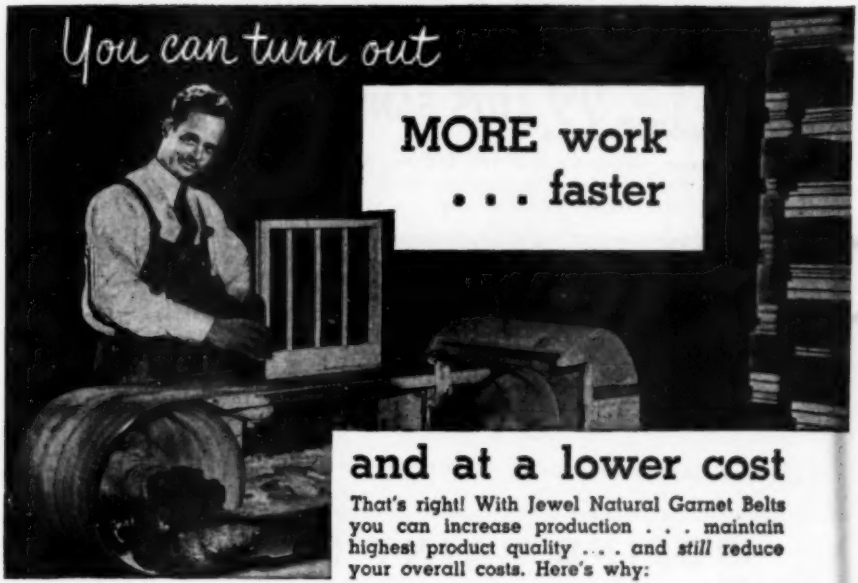

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when the solvents from the lacquer knit to the sealer. At first glance you will assume a poor sanding has failed to remove the filler. Closer examination, however, will usually reveal filler puffing. After drying, the surface has the characteristic of starved wood pores.

The only corrective step to take is to have your material supplier furnish a lacquer with a different solvent or change the filler. The keynotes used as solvents in some sealers and lacquers are the major offenders.

Filler should be applied after the wash coat. The method of filler application is one of choice. However, many old timers will take exception to the method of application and insist that brushing is, by far, superior to spraying. And unless some means is used to pad the filler into the wood pores after spraying, the brushing certainly has its advantages. Brushing will flow the material into the pores well but is slower than dipping or spraying and has the added advantages of considerable material saving over the spraying. For a fast and cleaner operation and on conveyorized methods of finishing, the spray method is best, but in either of the methods mentioned it has been found advisable to pad the material into the pores by machine. One type of padding machine in common use today utilizes the circular motion of felt pads rotating on a flexible shaft.

Once the filler has been padded in and the surplus removed by machine it is easy to clean up the work and mouldings by commercial wiping towels and stiff brushes. In many communities this type of finishing towel is secured on a rental plan, picked up, cleaned and returned each day.

To get the best results from fillers, constant agitation is recommended or the solids that are held in suspension

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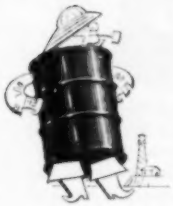

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will settle out, resulting in poor filling. A well compounded filler will not settle easily and is held in suspension with little stirring. Most manufacturers have found best results for obtaining consistent fillers by submitting samples of fillers which they wish duplicated to suppliers who specialize in their manufacture and the danger of errors in mixing on the job is eliminated. Once a filler manufacturer has produced a filler to your specifications it is given a number and can be depended upon for consistency in future orders.

The older types of fillers were relatively long drying, requiring in most instances 24 hours before sealing. The newer types of quick drying paste wood fillers now available will cut down the drying time to a minimum of two or three hours.

A manufacturer who is contemplating using the quick drying fillers should insist on the filler meeting the following requirements: (1) dry for recoating in approximately three or four hours, (2) workable, (3) suitable under lacquers, (4) must fill and pad well, (5) must not shrink in the wood pores, (6) must not bleach or turn gray and (7) must wipe clean and leave a clear tone for top coats.

Regardless of the type of filler used, it is highly important for good finishing results to have proper air circulation in the drying of paste wood fillers. The work should be stacked to permit free circulation of air which will contact all filled surfaces. For this reason, manufacturers who have installed conveyorized systems with forced drying experience little trouble from fillers.

The End

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announced by the Monroe Sander Corporation of Long Island City, manufacturers of industrial finishes.

Harold Tanney, vice president in charge of production, stated that his company has previously produced only clear hot spray lacquers, which reduce costs and speed up production for manufacturers of all types of furniture and other wood products. Because of those advantages, he said, there have been increasing demands for these finishes in colors which are made possible through new processes and special formulations of synthetic ingredients.

Mr. Tanney pointed out that in hot lacquers, heat used as a viscosity reducing agent, makes thinners (solvents) unnecessary. Thereby eliminating one cost factor. But aside from this, the finishes have many other monetary and practical advantages: (1) The finishes are adjusted to give the right viscosity because of the heat. (2) Uniformity is assured at all times. (3) Less coats of hot spray lacquers are required than conventional lacquers, thus reducing costs of materials and labor. (4) Coverage is increased per gallon. (5) Rubbing of finished products is easier. (6) Blushing of lacquer on humid days is overcome due to the controlled temperature. (7) A coat of hot lacquer has more solids than a coat of conventional lacquer.

Mr. Tanney also emphasized that repeated so called "cold tests" on the new hot spray lacquers show that these finishes are crack resistant after they are applied to furniture and other wood products. "Thus," he said, "these products can be safely shipped from one climate to another without damage to the finish, a factor of inestiminable importance."

The home of tomorrow may be a large open shell with partitions that can be shifted around or even removed entirely to adapt to the living needs of the moment.

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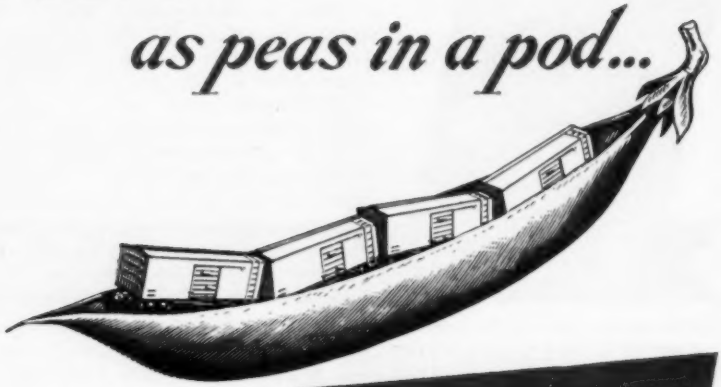

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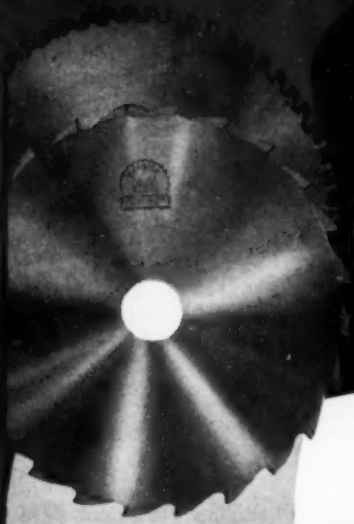

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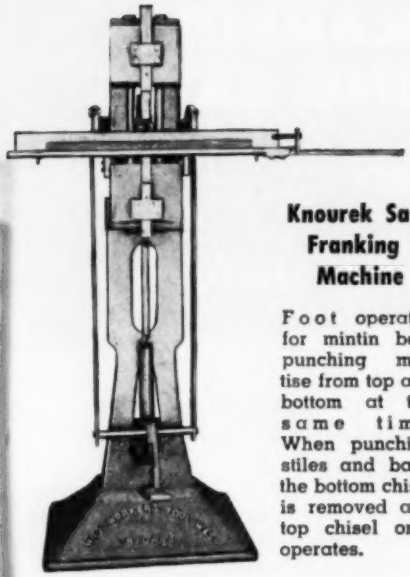

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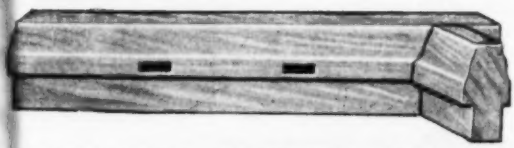

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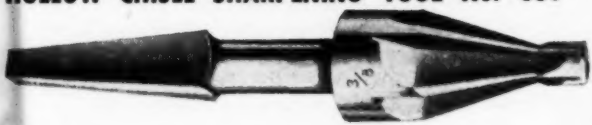

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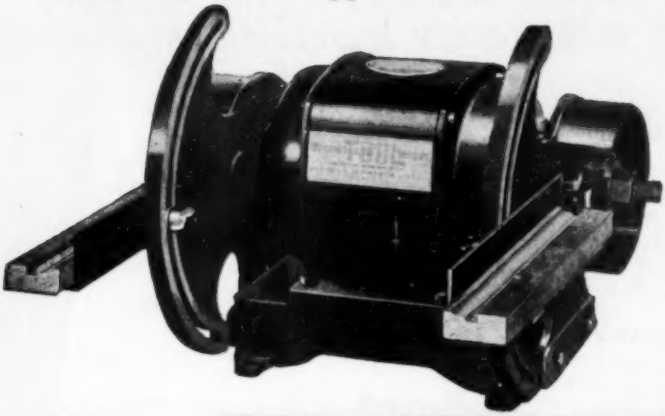

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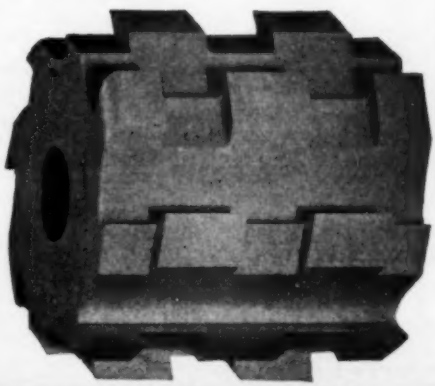

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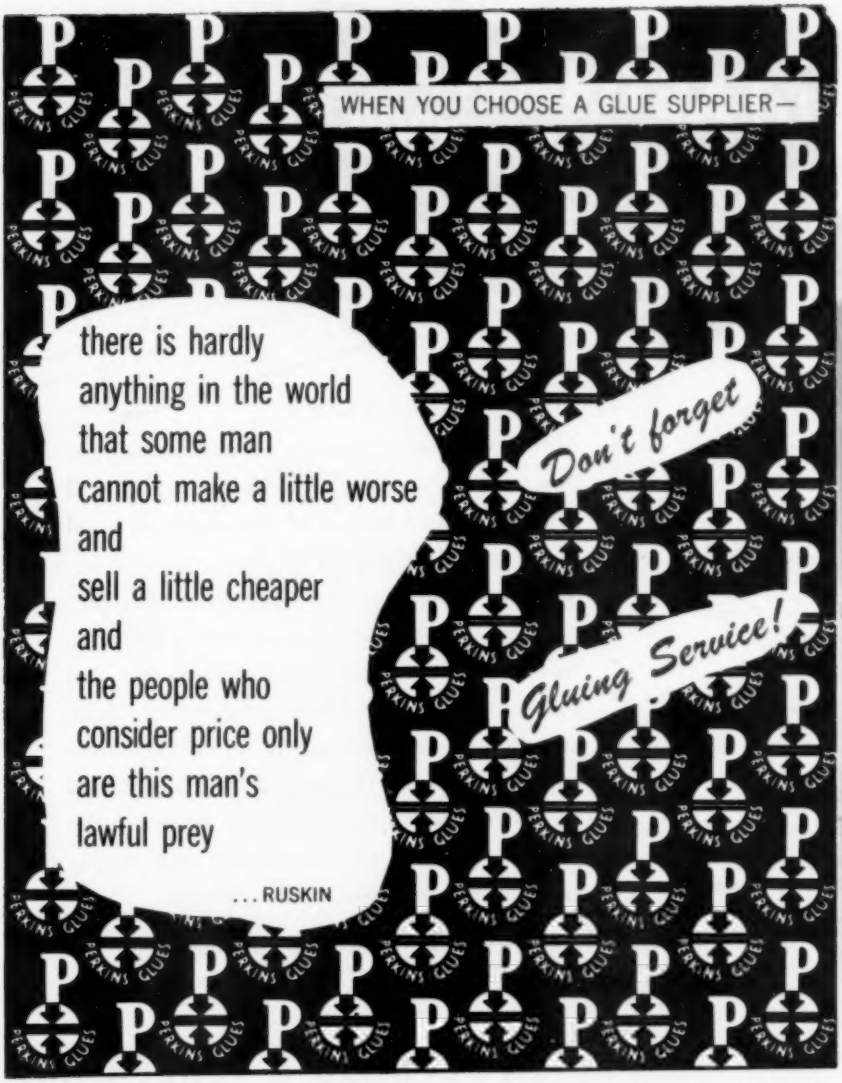

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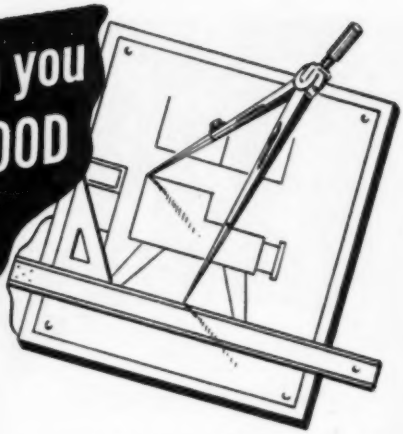

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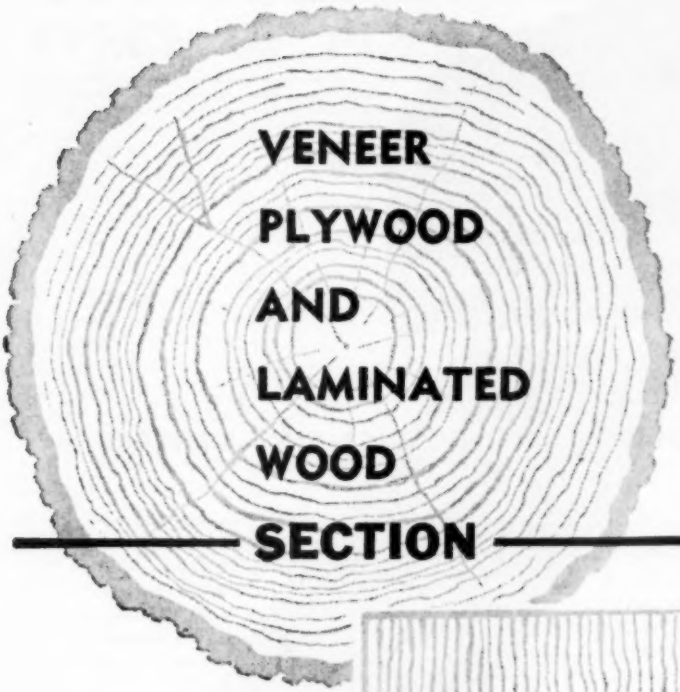

VENEER PLYWOOD AND LAMINATED WOOD SECTION

Features . . . .

Types of Plywood
By Thomas Perry

Veneer & Plywood
By Ned Bailey

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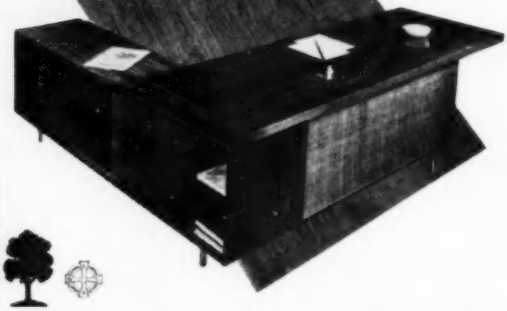

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TYPES OF PLYWOOD

Part 9

PLYMETALS

By Thomas D. Perry

PLYMETALS, or plywood consisting of sheets of wood veneer with inner or outer layers of metal, began to be commercially important around 1915. They date from the availability of the casein glues, derived from the dried curds of milk, combined with several other ingredients. The technique of making a highly moisture resistant wood glue, which was essentially a combination of casein and lime, was brought over to this country from England by William F. Leicester in the early 1900's. His early promotion of casein, as a glue for wood and plywood, led to the formation of the Casein Manufacturing Company of America, which was for many years affiliated with the Borden Company, and rather recently was merged with the latter company as one of its major divisions.

Most of the early development work in making plymetals was by the Haskelite Corporation of Grand Rapids and by the Met-L-wood Company of Chicago. In its early product the latter company utilized an extra layer of canvas or heavy cloth in the joint between the wood and the metal as a cushion against possible dimensional changes in service, but this is no longer considered necessary.

The early metal-to-wood joints were made with a special formulation of casein-latex at normal room temperatures and with pressures of the order of 100-150 pounds p.s.i. The plywood was made first, in whole or in part, and the metal layer or layers added in a second or subsequent gluing operation. The metal was almost always sheet steel, well galvanized, electrolytically, to prevent rusting, and called "Galvaneel."

Plymetal Today

Plymetal still remains a highly specialized type of plywood, and its cost limits it to applications where the differentials of higher cost are justified by the unusual service required, far beyond the range of normal plywood.

The objectives leading to these special applications can be classified as follows. In some instances an application may involve two or more objectives.

A. Fire Retardance. Metals are noncombustible, while wood burns, but its combustibility can be substantially retarded by proper impregnation. Alternately, a metal layer in plywood becomes a significant fire retardant.

B. Added Strength and Stiffness. While wood or plywood, pound for pound, is stronger than steel, the added bulk of the wood, needed to develop a certain strength, might result in an awkward and clumsy construction. Plymetal, in relatively thin sheets, has high strength characteristics.

C. Abrasive Retardant Surfaces. Normal plywood, adequate from a strength

standpoint, would soon be irreparably damaged by the hard service to which a truck body or cab would be normally subjected. Here the metal surface would resist the heavy blows and rough handling, while the plywood backing would supply the required strength and stiffness.

D. Improved Bolt Holding Power. One of the weaknesses of normal plywood is its inadequate bolt holding strength under heavy loading or racking stresses. It is difficult to anchor thin plywood so as to permit the development of its full strength.

E. Surface Protection from Deterioration. This is an objective in which a relatively thin surface foil of metal, usually aluminum, will be far more resistant to weather and moisture deterioration than any coatings of paint or other finishing materials. This is protection from atmospheric exposure, and does not include C above.

F. Bent Corner Strength. Plymetal, with one metal face, can be recessed through the wood and the metal bent to any angle required. This provides a strong, sturdy corner or edge for structural designs or conveyor equipment.

G. Heat Diffusion. An objective in which a thin foil of aluminum, directly under the face veneers in a desk top, will distribute or diffuse the heat caused by a cigarette stub or a moderately warm cooking utensil, without damage to the finish coatings on the veneer.

Plymetals, as discussed in this article, refer to laminated constructions in which the metal is actually glued to the wood with adhesives adapted to the severity of anticipated service. Such items as fire resistant metal clad fire doors, where a wooden door is completely encased in a metal envelope, but only attached by nails and screws, is an entirely different type of product from the plymetal under consideration.

Contrasting Physical Characteristics

One of the considerations that must have attention in any plymetal applications is the inherent physical differences between metals and wood, some of which may develop difficult problems.

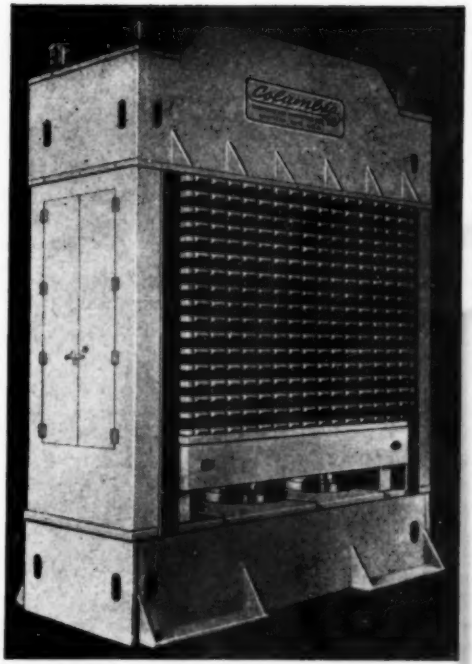
Metals are dense materials, relatively non-porous and the adhesive must be selected with this characteristic in mind. Wood is of low density and distinctly porous. Liquid adhesives, in a wood-to-metal joint, tend to penetrate into the wood and away from the glue line. While mechanical adhesion may be important on the wood side of the joint, specific adhesion is essential on the metal side. Hence it is important in selecting any wood-to-metal glue to work in close co-operation with the supplier of the glue.

Another important difference is the effect of heat; metals expand under elevated temperatures, while wood tends to dry out and contract. This coefficient of expansion varies between metals and their alloys. Take the case of a plymetal strip 100" long, raised 100° F, and it will be found that the theoretical expansion of the metal would be, in aluminum .123" and in steel .0734". In hot press gluing, from 70° F to 300° F, the possible expansion would more than double these results. Hence if hot pressing is employed in wood-to-metal joints, the plymetal must be cooled before releasing pressure, by circulating cold water in the steam platens. This is a time consuming operation and is seldom practical. Still further, plymetal exposed in service to large variations in temperature, is likely to deteriorate in joint strength.

Still another consideration is the swelling and shrinking that occurs in wood, between an air dried condition at 10% m.c. and wood saturation at 30% m.c. and up. In all-veneer constructions, dimensional changes in plywood, due

New CONVERTIBLE HOT PLATE PLYWOOD PRESS

provides for future expansion of production at small cost



Columbia's new convertible hot plate plywood press is designed for installations where a full 20 daylight press is not immediately necessary but where provision for expansion is desirable. It has 16 daylights . . . can be increased to 20 daylights by removing spacers on strain rods, raising crown and inserting additional platens and step plates. No machining; no expense other than cost of added platens and step plates and small erection expense. Steam and pressure systems and all structural parts designed for 20-daylight operation.

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For bulletin and address of a nearby representative qualified to assist with your curing problems, address Columbia Machinery and Engineering Corporation, Hamilton 4, Ohio.

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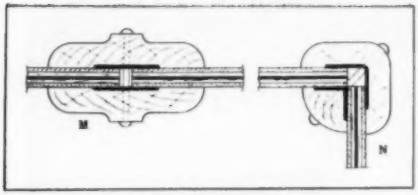


Fig. 1. Metal interlayers for portable office partitions.

to moisture, are relatively insignificant, but if lumber layers are involved this factor may be important.

Preparation of Metal Surfaces

One of the major problems is the adequate cleansing of the metal surface before applying the adhesive. Most metal surfaces tend to be oily and greasy. Combinations of oil and glue will not make strong and durable joints. Several methods are in use to cleanse the metal surfaces: (1) by heating, or annealing the metal until the oil is dissipated; (2) by sand blasting; (3) by scouring with mineral wool; (4) by washing with strong detergents; (5) in the case of ferrous metals, by electrolytic galvanizing; and (6) by superficial etching in an acid bath, which is usually heated. The ultimate test of adequate cleansing is to flow water over the surface. If the water film is continuous, the metal is clean; but if the water film collects in irregular spots, oil is present. All metal cleansing operations should be undertaken immediately before gluing, within an hour or two.

Preparation of Wood Surfaces

It is of equal importance in wood-to-metal gluing to properly prepare the wood surface of the plywood. Most plymetals are made with 2-stage gluing, first assembling the veneer into plywood by conventional methods, and adding the outer layers of metal in a second and subsequent gluing stage. Plywood, sanded or unsanded, has a somewhat uneven surface, where either the softer areas have been pressed down in gluing, been sanded a bit deeper. Neither of such surfaces will give the best metal-to-wood joints. The preferred surface for such gluing is a planed surface, resulting from a very thin or "skin" cut with a sharp cutter head. This produces a "sharp" feeling surface, that is level without appreciable depressions, and that reduces the plywood to an accurate and uniform thickness.

Methods of Gluing

There are three principal methods of gluing metal to wood, which are not interchangeable, but each is suited to certain problems:

1. Selecting a glue or adhesive that has sufficient adhesive characteristics for both metal and wood surfaces. Casein-latex is an example, which has good water resistance, and while it does deteriorate slowly under aging, due to the presence of the latex, this is seldom significant.

2. Select two adhesives which are chemically compatible, one of which is especially adapted to wood, and the other suitable for metal. Apply each adhesive to its appropriate surface. The adhesives should harden at temperatures not above 150° F, except where the joints are of relatively small areas.

3. Treat the metal surface with a

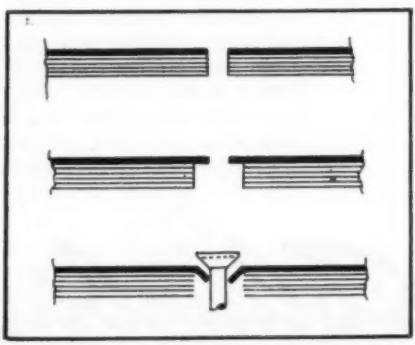
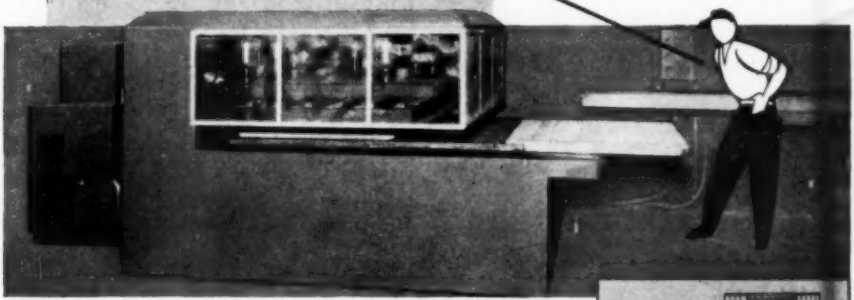


Fig. 2. Flush screw heads in plymetals.

ONE OPERATOR
DOES THE ENTIRE JOB

- handles the glue spreading
- lays up the stock
- removes finished work
- stacks it on a truck

PLYCOR
ONE-MAN
Roto-gluer



The Plycor One-Man Roto-gluer offers the most practical and economical method of edgegluing for the smaller manufacturer. One man with a Roto-gluer can produce 3000 to 6000 sq. ft. of glued-up stock per day. And look at the different types of work it does:

- **Produces glued-up panels, lumber cores, table tops, sash and door stock, and other similar work**
- **Glues hardwood panels for solid furniture with exposed joints**
- **Will do lumber core banding and veneer core banding**
- **Can be equipped with interchangeable electrodes for panel-to-frame gluing and other sub-assembly work**

There's no wasted time and effort with a Roto-gluer. It's loaded and unloaded simultaneously. The operator hardly steps out of his tracks. Every motion is a productive motion. Result . . . one man produces as much as two and usually three men using ordinary clamp carrier methods . . . flatter, better panels . . . better glue joints . . . more sq. ft. per man-hour . . . at lowest cost.

The Roto-gluer is simple and easy to operate. It's equipped with finger-tip control . . . automatic timing . . . air operated top and side pressure cylinders . . . and high frequency electronic curing (Westinghouse 5 K.W. or 10 K.W. generator). And it's engineered and built for years of trouble-free service.

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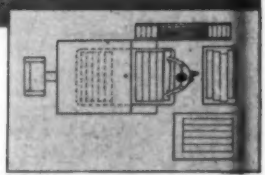
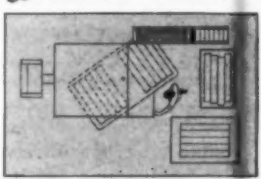
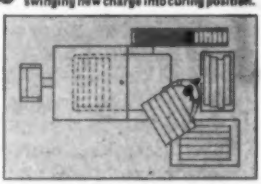


a While one charge is in curing position, operator lays up the next charge.



b When curing cycle is completed, operator shifts valve. PivoTable revolves, swinging new charge into curing position.



c Finished panel is delivered directly in front of operator who stacks it onto truck and then lays up the next charge.

PLYCOR COMPANY

Division of **EARLE HART WOODWORKING MACHINE COMPANY**

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Table 1. STIFFNESS FACTORS for PLYMETAL*

SHEET STEEL Without Plywood					Plymetal Thickness Inches	.021" STEEL, 1 SIDE ON PLYWOOD			.021" STEEL, 2 SIDES ON PLYWOOD		
Thickness			Lbs. Sq. Ft.	E x I		Lbs. Sq. Ft.	E x I ⊥	E x I ∥	Lbs. Sq. Ft.	E x I ⊥	E x I ∥
Dec.	Ga.	Frac.									
.036"	20		1.50	.12							
.060	16		2.50	.56							
.105	12		4.37	3.1							
.135	10		5.62	6.5							
.164	8		6.87	12.							
.194	6		8.12	20.							
.250	3	1/4"	10.2	39.	1/4"	1.46	1.9	3.2	2.25	17.	17.
.313	0	5/16	12.7	76.	5/16"	1.62	3.8	6.2	2.40	27.	28.
.375		3/8	15.3	140.	3/8	1.77	5.4	12.	2.56	40.	43.
.438		7/16	17.8	210.	7/16	1.96	11.	18.	2.75	55.	62.
.500		1/2	20.4	310.	1/2	2.10	17.6	22.	2.89	74.	80.
.625					5/8	2.42	29.	43.	3.20	122.	130.
.750					3/4	2.75	48.	72.	3.48	182.	192.
.875					7/8	3.05	81.	110.	3.87	255.	269.
1.000					1	3.40	122.	150.	4.21	343.	359.
SHEET ALUMINUM Without Plywood					**Plymetal Thickness Inches**	**.015" Aluminum, 1 Side on Plywood**			**.015" Aluminum, 2 Sides on Plywood**		
Thickness			Lbs. Sq. Ft.	E x I		Lbs. Sq. Ft.	E x I ⊥	E x I ∥	Lbs. Sq. Ft.	E x I ⊥	E x I ∥
Dec.	Ga.	Frac.									
.047"	16		.71	11							
.078	12		1.14	.42							
.102	10		1.44	.87							
.125	8		1.81	1.8							
.156	6		2.89	3.6							
.250		1/4"	3.52	14.	1/4"	.84	1.2	2.3	1.01	4.3	4.9
.313		5/16	4.41	26.	5/16	1.00	2.3	4.5	1.17	7.0	8.2
.375		3/8	5.29	43.	3/8	1.15	3.2	7.7	1.43	10.1	13.2
.438		7/16	6.17	69.	7/16	1.34	5.6	12.	1.52	14.	19.
.500		1/2	7.06	110.	1/2	1.48	9.4	16.	1.65	20.	26.
.625		5/8	8.82	200.	5/8	1.80	17.	28.	1.98	35.	43.
.750		3/4	10.58	360.	3/4	2.13	29.	46.	2.25	55.	65.
.875					7/8	2.46	48.	68.	2.63	81.	94.
1.000					1	2.78	72.	94.	2.98	114.	129.

⊥ = With Transverse Grain Face (Crosswise) Next To The Metal.
∥ = With Logitudinal Grain Face (Lengthwise) Next To The Metal.
E x I = Modulus of Elasticity X Moment of Inertia = Stiffness Factor.

* Table Derived from Semi-Logarithmic Chart Developed by Haskelite Manufacturing Corporation, and Used by Permission.

metal type of adhesive, producing on the metal a thin coating to which wood type adhesives will make a strong joint. Example might be coatings of Redux or Cycleweld properly cured on the metal against a non-adhering caul, like polished copper. A waterproof resin adhesive, like resorcinol, can be used to glue this treated metal to the wood. This final glue joint can be cured at room temperatures and will undoubtedly produce the most water and heat resistant bond that can be made between wood and metal.

Wood-to-metal adhesives were described in detail in "Wood-to-Metal Joints" published in the September 1951 issue of WOOD WORKING DIGEST, to which the reader is referred for further data.

Plymetal for Fire Retardance

While resin bonded plywood is slow burning, somewhat resembling a solid and compact mass of paper, it is combustible. Hence the use of plywood

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is often prohibited, under building ordinances, in areas requiring fire proof construction. In many such cases it is important to achieve attractive interiors with interesting wood figure effects. If such plywood has an interior layer of 30 gauge (approx.) steel, or its equivalent, it will, in most cases, prove to be acceptable, even under rigid scrutiny and careful interpretations. This is an approved method for interiors in banking rooms, hospitals, schools and public buildings, where wood interiors and equipment are wanted.

Another example is a passenger elevator car, and the partial enclosure of the elevator well, where they are adjacent to rooms finished in natural wood. Movable office partitions, which can be erected quickly for tenant requirements, and altered for subsequent tenants, are often made of plymetals, with inner metal layers, and a framework of wood enclosed metal mouldings, or supports, as shown in Fig. 1. Some extruded metal mouldings, for plywood corners and flat joints, have very thin veneers glued directly on the exposed areas of the mouldings. Only the most durable and water resistant adhesives should be used in plymetals where fire retardation is an important consideration.

Plymetal Gives Added Strength

In the deflection of any structural member, under load, such as a horizontal beam, the lower side tends to stretch, known as a tensile stress, while the upper side is pushed together, as in compression. Take the case of a strip of plywood, 5/8"-5-ply, which is 12" wide by 100" long. It can be loaded until it breaks. If metal layers, 1/16" thick, are properly glued to each face, it will carry much heavier loads before breaking, depending on the thickness and kind of metal. It is obvious that the metal clad plywood is much

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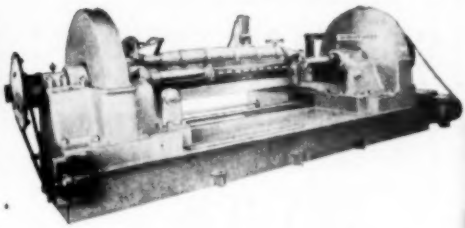

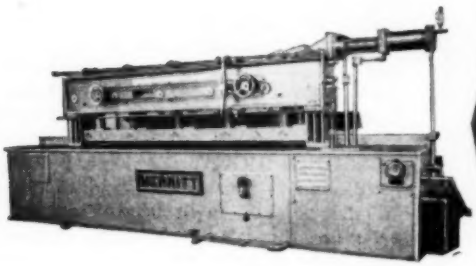

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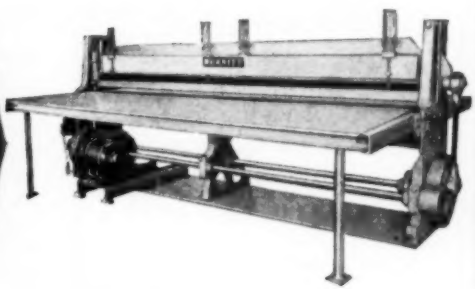

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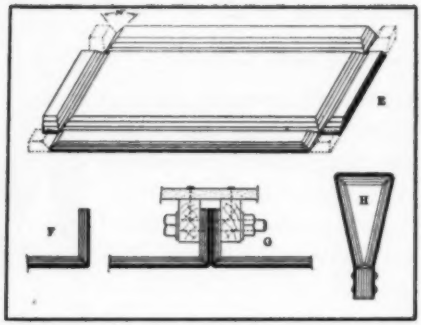


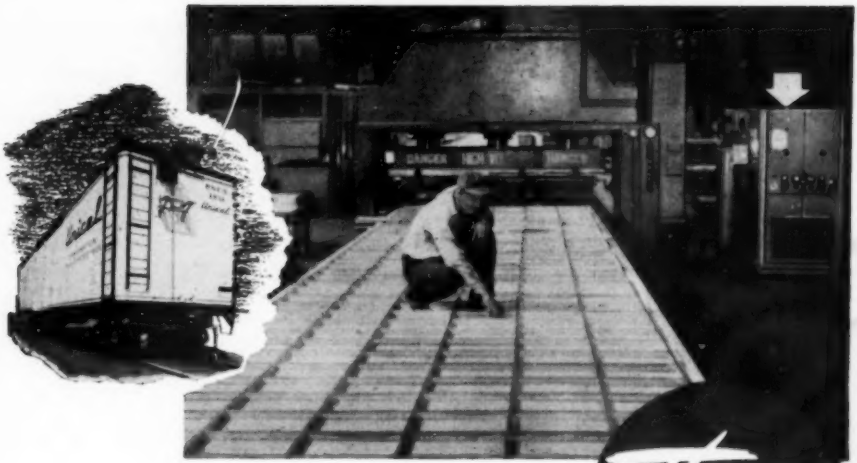
Courtesy U.S. Plywood Corp.
Fig. 3. Folded plymetal for structures.

stiffer. In some applications a metal layer on one side only may be adequate and less costly. This data on "Stiffness Factors for Plymetal," shown in Table 1, has been frequently published ("Modern Plywood," p. 130 and WOODWORKING DIGEST, September 1951, p. 80) and is considered standard data on the subject. It is again included here for the convenience of readers. This table indicates the stiffness factors for metals alone and for various plymetal constructions. The increase in stiffness per pound of weight is little short of amazing.

This stiffness quality in plymetal has made it an exceptionally useful material for truck bodies and cabs, for storage bins, for warehouse partitions, for elevator cabs and enclosures (in addition to the fire retardant qualities noted above), and for many other industrial uses where stiffness and strength requirements justify the cost.

Plymetal Provides Abrasive Resistance

A plywood surface is only as resistant to abrasion as the species of wood of which it is made. Examples of practical abrasion might be floors or gangplanks in factory or warehouse trucking areas, interior walls in highway trucks or railroad freight cars where cases and drums, both in loading and transit, would seriously damage the



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hardest plywood surface. Plymetal meets these conditions and provides long and useful life under the most severe abuse. Unless stiffness factors are involved, plymetals for such applications need have only one metal face, preferably of galvanized or stainless steel.

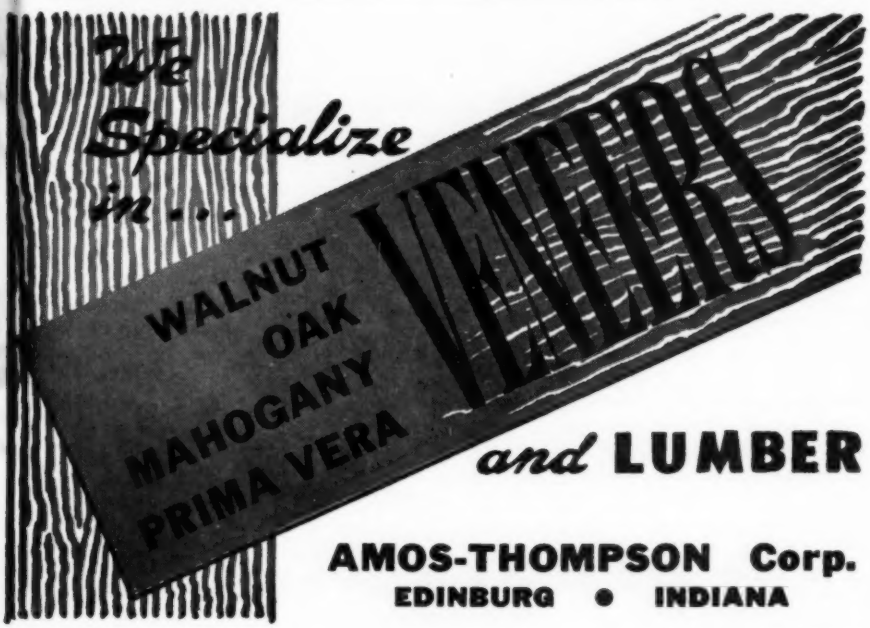
Other applications of plymetal, under this classification, are machine tables, conveyor runways, pallets, delivery chutes, buffer guards at conveyor turns, as well as many other industrial devices, where lightweight, large areas, moderate stiffness and wear resistant surfaces are essential.

Plymetals Give Improved Bolt Holding Power

There are many industrial applications where the proper fastening or anchoring of plywood presents problems. Bolts, screws or nails may shear through the edges, and surface gluing may not be practical. There are many answers to this problem, more or larger fastening devices, clamp distributing bars, additional plywood thickness, etc., but often the substitution of single or double faced plymetal may be the simplest and cheapest. A method has been developed for countersinking single faced plymetal for flush bolt and screw heads, as might be required in a conveyor bed. This consists in cutting away the plywood back sufficiently to permit forcing the metal face into a conical recess, as is shown in Fig. 2.

Plymetal Preserves Surfaces

The plymetal applications, so far described, have been made of sheet metals, usually of steel, either for increasing strength or resisting wear. Another type of plymetal that has not been so widely recognized and appreciated is one in which a relatively thin foil, usually of aluminum, is glued



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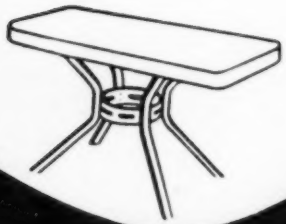

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to the plywood surface to provide more adequate protection than can be secured by paints, enamels or other types of finish coatings. These foils are of the order of .005" thick, but their cleansing, handling and adhering are rather complex and costly.

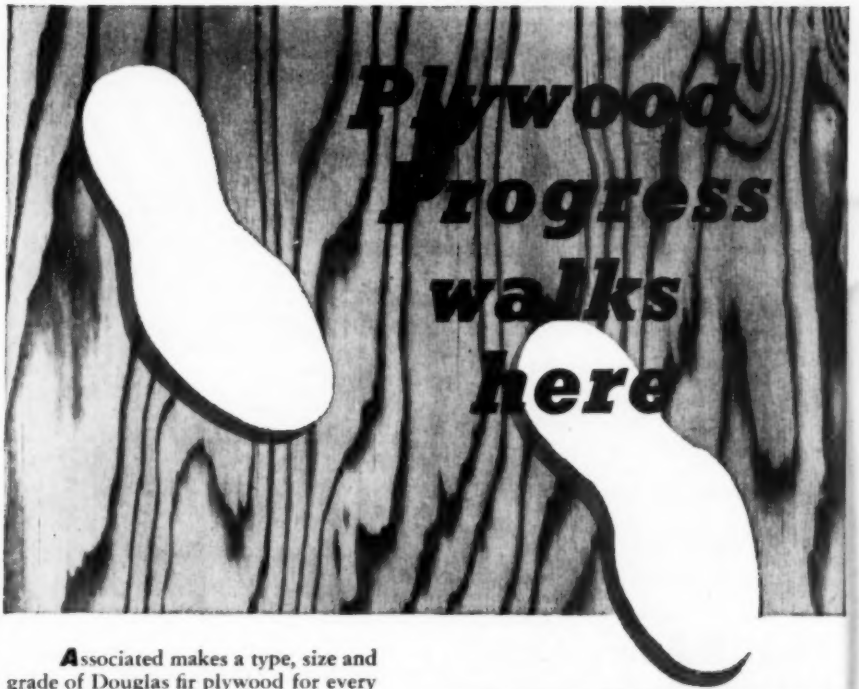
There is an excellent alternate, which serves the same protective end, that of the spray application of liquid metal. Since these sprays are usually applied after assembly, erection or installation, they also serve to protect edges, corners and to fill the voids that may occur.

These thin surface applications, either foil or sprayed metals, are too thin to develop the expansion problems which have been described for sheet metal layers. Hence the previous precautions with regard to use under elevated temperatures are not significant.

Bent Corner Strength

It has been indicated that plymetals may be used to develop far greater stiffness than is inherent in normal plywood. There are interesting exceptions to this plymetal characteristic, in which single faced plymetal may be recessed on the back and bent into rather sharp angles. The ductility of the metal is sufficient to provide a strong, sturdy corner, and if the "V" cuts are accurately made, the joint will be tight and the metal well supported by plywood backing at the corner.

Two examples can be cited. The plymetal sheets shown in Fig. 3 are recessed with "V" cuts (90°) on the plywood side, as in E, and the surplus corners cut away. When the projections beyond the cut are turned up to a right angle, with an application of glue in the angling grooves, the result will resemble a very large but very shallow pan, plywood on the inside and metal outside. These turned edges serve as



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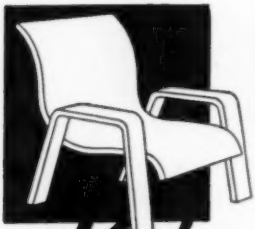

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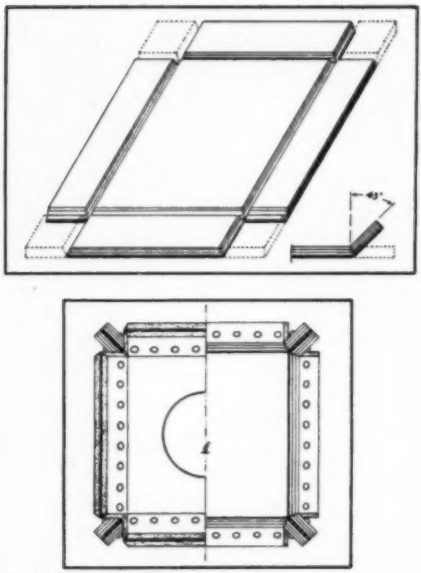


Courtesy U.S. Plywood Corp.

Fig. 4. Metal lined powder chest.

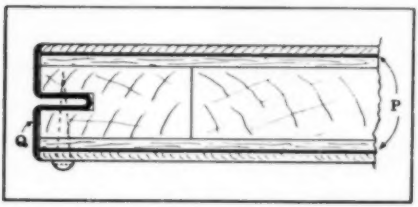
stiffeners, and if used as wall panels, can be bolted together, as shown at G. Furring strips are usually included in the bolting operation to provide for attaching plywood or fibre board interiors as indicated in the sketches. Cutouts can be made for windows or doors, and turned edges similarly provided as door and window frames.

Another example is the plymetal container, illustrated in Fig. 4, which was found to be safe, sturdy and easily handled as a receptacle for carrying and storing explosives. In this case the "V" groove through the plywood back to the metal is 45°. All turned edges are bolted together in pairs, to make a rectangular shape with square interior corners, and outward projecting fins. A suitable calking compound is applied between the turned metal faces and the angling wood surfaces, producing a tight container. In some cases a

bit of welding or metal spray can be applied, if required, through the rather sizable "bung." All edges that come in contact with the floor or walls, i.e., the fins, are wood faced, so that the hazards of sparks from friction are practically eliminated. The possibility of rusting during weather exposure was obviated by the use of stainless steel, which was glued to fir plywood, after accurate planing to uniform thickness.

Plymetal for Heat Diffusion

The defacement of office desk tops by careless cigarette smokers has been a serious annoyance, both to the makers and users of desks, since no type of finish coating has been developed that proved to be sufficiently heat resistant. This long standing problem was solved, as is often the case, by a simple procedure, that of inserting a thin foil of aluminum just under the face veneer layer. This foil is precoated with a special formulation of casein-latex and laid up with the veneers as the desk top is glued. It is so thin that it does not interfere with the trimming of the edges with standard wood cutting tools. Such a desk top, with a metal protective edging, is shown in Fig. 5. Similar constructions, with the aluminum interlayer, can be used for other types of household furniture. This feature is a most effective means of preserving the beauty of finished plywood surfaces.



Courtesy Timber Engineering Co.

Fig. 5. Cigaretteproof desk top with inner metal layer.

Conclusions

Plymetals are plywood developments

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which combine the many advantages of normal plywood, with additional desirable features that not only increase its strength, but, at the same time, provide effective measures to improve its durability, under extremely severe service. These protective qualities are a distinct aid in broadening the field of plywood applications into types of utilizations where normal plywood would be inadequate.

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We pride ourselves on certain traditions, certain values.

As free men we believe in the tradition of individualism . . . in the integrity of the individual, his personal worth, his independence, his dignity.

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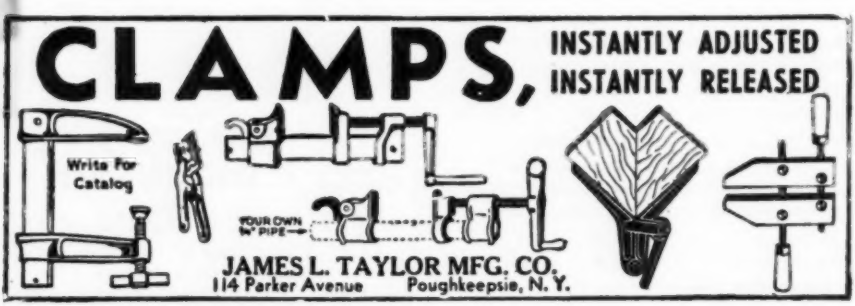
We believe in the competitive spirit . . . in competition among ourselves, but not between the governed and those who govern.

We believe in free private enterprise . . . in what a man can achieve by his own hands and brain, by his energy, industry and inspiration, by his determination and self-reliance.

As free men we believe in the other fellow's freedom—in his merit, his integrity and his independence.

We believe in the tradition of mutual self-help. And we endorse the practice—as well as the theory—of the Golden Rule.



We believe in the tradition of decentralized power—politically and economically.

As free men we believe in a rule of law—and in a government of laws rather than of men. That is because where laws rule, impartial justice is probable—where men rule, partial justice is possible.

As free men, we believe in the right of democratic criticism of authority. We reject thought control as well as speech control.

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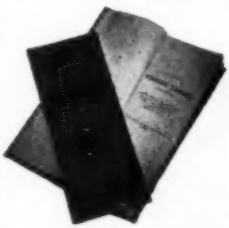

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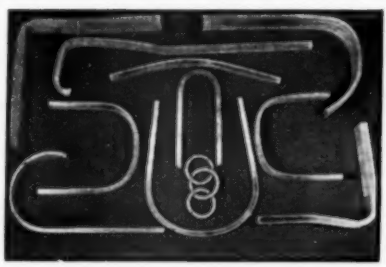

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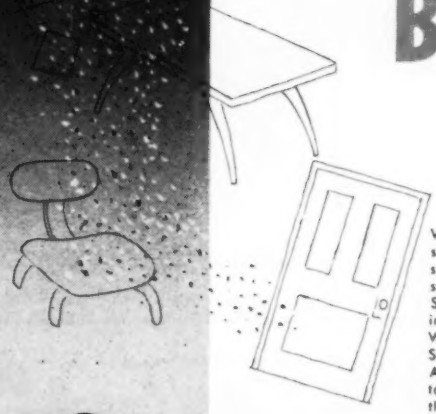

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MILITARY WOOD USAGE

Marine Laminating

By John G. Kuenzel

Strength and durability required to withstand destructive forces and organisms of the sea differ from requirements necessary to withstand forces encountered on land or in the air. Wood continues to be an important shipbuilding material and a source of supply of choice structural timbers is assured as a result of laminating techniques developed by American ingenuity.

The size and quality requirements of wood shipboard members are being solved by laminating. The technology of wood preservation is challenged to solve the problem of supplying wood resistant to deterioration.

MARINE laminating is an exact technical art born of World War II shipbuilding needs for large high quality structural timbers. The Bureau of Ships is traditionally dependent upon lumber and timber of the highest grades available from domestic and foreign forests. Those of us in the Bureau of Ships concerned with specifications and quality control of forest products for marine usage recognize that this tradition has been a heritage from the earliest written records of shipbuilding. The Phoenicians, Romans and later European countries successively exploited the choice Lebanon cedar of Mediterranean forests so completely that today only a small grove of 100 trees remains in the garden of a Lebanese monastery. American forests first rang to the shipbuilder's axe almost 1,000 years ago when Greenland Vikings "Eric the Red" and his son "Leif" harvested a cargo of logs from the North American mainland between Cape Cod and Nova Scotia.

The first cargoes shipped to England from the Plymouth and Virginia Colonies included cedar logs from Cape Cod and naval stores from Jamestown. Throughout our early history the American white oak and other choice shipbuilding woods were sought and used by every sea power that explored the Western Hemisphere.

Woods for Shipbuilding

The course of history which has led to United States naval supremacy has

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Mr. Kuenzel is Senior Materials Engineer, Forest Products Research Division, Bureau of Ships, Navy Department, Washington, D. C. The views expressed here are his own and should not be construed as representative of the Navy Department.

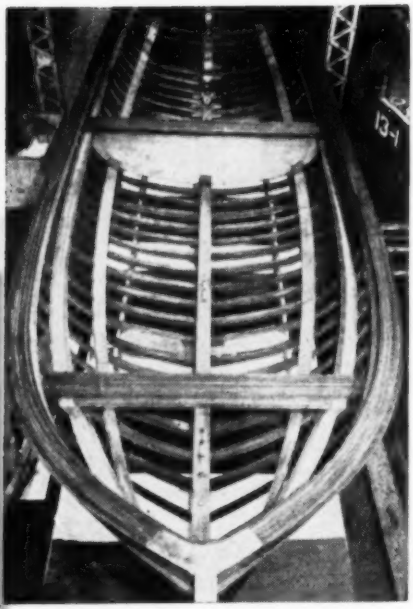

Fig. 1.—A forty-foot motor launch having completely laminated foundation including capping, deck frames, shaft log, stem, horn timber, and transom, fabricated at the Puget Sound Naval Shipyard, Bremerton, Washington. (Official photograph, U. S. Navy.)

in our times left its battle scars on our forests. In 1944 the Navy required 9,000,000 tons of steel; during the same period 3,000,000 tons of wood were required for all types of naval military construction, afloat and ashore. It is becoming increasingly difficult to meet the requirements for shipbuilding timbers from our domestic old growth trees. Despite promising recent developments in structural aluminum and molded plastic boat hulls, wood continues to serve many important shipbuilding needs. Wood is our only naturally renewable structural material. It is significant that the present shipbuilding program gives high priority to wooden vessels of non-metallic, non-magnetic, laminated design.

Sawn timber products used in naval construction are of three types: utility lumber, structural timber, and special boat and shipbuilding lumber. The first type consists essentially of construction or yard lumber generally stocked in grades of No. 1 Common and Better hardwoods and No. 3 Common and Better softwoods. A wide choice of domestic woods from every lumber producing region are procured under grade-marking rules of the various lumber associations to provide the advantages of a competitive market and broad geographical supply sources. Such lumber serves countless purposes including the fabrication of intricate model ship designs at the David Taylor Model Basin utilizing cherry lumber from Pennsylvania, and white pine from Idaho or California; submarine battery wedges made at Philadelphia Naval Shipyard from New England beech or maple; and laminated small boat members and keel blocks made of Douglas fir, southern pine or white oak at several shipyards. Lower lumber grades are also procured at all shipyards for pallets, boxes, crating and dunnage.

The quality of structural timber and special boat and shipbuilding lumber must conform to certain basic principles of design. These materials for use in stage and scaffold plank, shipdecking, planking and framing timbers must be stocked in the highest grades and largest sizes available and their procurement, therefore, presents the greatest problem from the standpoint of available supply.

The principal woods used by the Navy on the basis of quantity required are Douglas fir, southern pine, "other softwoods," white oak and "other hardwoods," in the order named. Considering shipbuilding needs alone, white oak ranks second in the volume required. "Other softwoods" include cedar

(southern white, Port Orford, Alaska, and western red), cypress, hemlock, larch (tamarack), pine (white, sugar, ponderosa, red, and lodgepole), redwood spruce, (Sitka, Engelmann, and white). "Other hardwoods" include ash, balsa, basswood, beech, birch, cherry, cottonwood, gum, elm, hickory, ironbark, lignum vitae, mahogany, maple, teak, and yellow poplar. The uses for these woods have been evolved through many years of shipbuilding. Because the timbers of tremendous size cut from old growth trees are not always available in the quantities and grades required from eastern and southern forests, the shipwright's choice for material has shifted to suitable species of large size in the Pacific Northwest, Alaska and tropical America.

White oak, because of its structural superiority and durability is an important component of many types of wood hull naval vessels, including thirty-five designs of patrol, landing, district craft, mine-sweepers, auxiliary transport, salvage and rescue vessels ranging from 70 to 183 feet in length and over twenty five designs of small wood boats up to 63 feet in length. Steam bent or sawn bolted frames, keels, stems, skegs, shaftlogs, knees, stern posts, and deck beams for many of the 50,000 wooden craft in our two-ocean Navy of World War II utilized white oak.

The total white oak requirements for the present wood shipbuilding program are tentatively estimated at approximately 30,000,000 board feet. This is equivalent to approximately one-sixth of the 1950 production of this species in grades of No. 1 Common and Better. The ships will be several years in building, and provisions are made for utilizing treated red oak and other suitable alternate species. As a part of this program, the facilities of American forest products industries to produce laminated ship timbers are being studied for mobilization.

Marine Laminating

The development of marine laminates such as are specified in the present naval wood minesweeper program originated about 1939 or 1940. The process evolved for gluing large straight or curved ship timbers for the Bureau's gigantic needs utilized principles of laminated arch construction introduced in the United States from European sources, with one major distinction. The casein, and urea-formaldehyde glues found to be suitable for interior laminates in shore built structures delaminated in salt water. Modern phenolic resin glues such as have been used in marine or exterior type plywood since 1920 and cured in hot plate presses at temperatures of 350° F. were considered uneconomical in the production of large timbers. The Bureau explored the possibility of high-frequency curing of the high-temperature setting phenolic adhesives about 1941, but preliminary experiments were not promising, due to the variable dielectric properties encountered in large wood assemblies of the species and shapes required for ship timbers.

In 1942, when the need was great the Bureau called a conference of synthetic adhesive manufacturers, presented the problem, and within 6 weeks their laboratories produced, with the help of a divine Providence and American ingenuity, a resin adhesive curing at a lower temperature than the boiling point of water, and durable under extreme service exposure at sea. A great variety of laminated ship and boat parts have been produced for the Bureau (Fig. 1).

The Bureau of Ships may justly be proud of a part in this development, which is the first major contribution to wooden shipbuilding in 2,000 years. One of the Bureau's ship designers informed me that he scanned wooden shipbuilding literature from the era of Viking ships to the present in the drafting of

the hull detail plans for a 165-foot wooden minesweeper. A volume published in 1863 on wooden ship design (7) describes methods evolved at the peak of large wooden ship construction, and represents accumulated knowledge from an almost forgotten generation of master boat builders and shipwrights working with the finest old growth timbers. When such a reference book is again published, the Bureau's present laminated ship design will mark a new era in this field.

Adhesives for Marine Laminating

The intermediate and room-temperature-setting adhesives of phenol, melamine, or resorcinol base formulated for marine laminating are procured under Military Specification MIL-A-397 (1). Adhesives suppliers are required to submit proposed intermediate temperature setting, type II class 2, marine service adhesives for approval testing. These tests require approximately 35 days for completion and include 21-day accelerated cyclic-exposure and block shear tests of laminated white oak beams cured in accordance with manufacturers' instructions. Acceptance of a marine service adhesive is predicated on performance of test beams in comparison with standards derived from extensive investigations, also complete physical and chemical evaluation of the adhesive with respect to composition, acidity limitations, cleanability, liquid working life, and storage life. A Qualified Products List is maintained of approved adhesives, in which the curing temperatures and curing period maintained at the innermost glue line for each manufacturer's type II class 2 adhesive is shown.

Laminating Techniques

Laminating procedures for white oak and for Douglas fir ship and boat members are described in specifications MIL-O-15154 (2) and MIL-F-2038 (3)

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Its "easy-to-read" scale is illuminated by a flood light on the front cover. With three 20" long scales on the front section of the cutter table, a magnified depth scale of 1" wide by the depth of the machine, is graduated in 1/16", plus a master scale for positioning back feed bar, assures easy and accurate measurement for precision cutting.

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respectively. These specifications list in detail the material requirements and closely controlled fabrication procedures and conditions which must be met and followed to produce acceptable prefabricated marine laminates of these species. A little less than 10 years of experience in laminating by several naval shipyards and by private concerns specializing in laminated wood for naval construction have established the need for a relatively high temperature of cure to develop oak glue joints equal in strength to solid wood that resist delamination under extreme service conditions in sea-water (4). A number of phenolic-resin and melamine adhesives cured at 190° F. at the inner glue line for 10 hours, and resorcinol adhesives similarly cured at 140° F. for 10 hours have successfully resisted delamination in white oak beams as shown by several years' service use, and by weathering and accelerated cyclic-exposure tests conducted at naval shipyards and at the U. S. Forest Products Laboratory. Douglas fir, southern pine, white ash, and similar woods having lower density than oak have been successfully glued for boat and ship timbers using resorcinol adhesives cured at somewhat lower temperatures, for the same curing period. Each type of adhesive and each species of wood to be glued must be related to a definite laminating procedure based on performance requirements (5).

Laminating procedure specifications are being considered for such shipbuilding wood products as teak-Douglas fir decking, ash boat stock, scarfed long-length ship planking, and many other items procured by the Bureau. The research necessary to develop adequate material specifications is gaining momentum at many government, private, and institutional laboratories. Only through thorough, painstaking effort

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will this relatively young offspring of the forest products family grow into a modern progressive industry.

The challenges presented are worthy of the best technical skill we can summon. Primarily, these problems lie in the realm of wood preservation technology. Old growth timbers with their large proportion of durable heartwood for the shipwright's needs are fast becoming nostalgic memories. Research to determine means for suppressing and completely arresting deterioration of woods subject to extremes of decay, weathering and marine-borer attack is the key to wider acceptance of a great variety of domestic wood species as structural shipbuilding material. Laminating has only unlocked the outer door to this problem.

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All construction for the first quarter of 1952 is now 2% ahead of the first quarter of 1951, due largely to gains in public construction.

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The Feed Rollers and the Table Rollers are set at a slight angle so as to keep the stock against the fence; but do not affect the action of the planer when used only for surfacing.

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Speed—7000 R.P.M.
Saw-Collars—1½" Dia.
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VENEER and PLYWOOD

OPPORTUNITIES IN PREFAB BUILDING

PART 21

By Ned Bailey

THE famous English statesman, Benjamin Disraeli, once said, "The best security for civilization is the dwelling, and upon proper and becoming dwellings depends more than anything else the improvement of mankind. Such dwellings are the nursery of all domestic virtues and, without a becoming home the exercise of those virtues is impossible."

My article last month about "Opportunities in Prefab Building" created so much interest that I felt justified in writing again along the same lines. This decision was further encouraged during a recent visit to New Orleans, La., where I saw several large home building projects in the course of development.

Pre-cut, pre-fab and a combination of both are rapidly becoming the accepted method of home building where real estate developments on a large scale or government housing projects are concerned. One real estate development where low and medium priced homes were available had a number of prefab homes stacked on the site ready for quick construction when a home sale was made. This company, with their office in a one bedroom type of prefab, had eight floor plans and six different exterior finishes to offer. Also, they had combinations that could be added by way of a breezeway and one and two car garages. For some reason, they refused to let me take pictures of their setup. The place was laid out like a park with drives, water, gas, and electricity already in. Lots were marked off and numered. There were church, school, playground and auditorium sites marked off on the plot plan which showed room for 150 homes. They were selling an average of five of these homes a day at from $5,000 to $7,500. They were not equipped with built-ins, sinks, plumbing, electric wiring or gas fixtures. Taken all in all they had arranged the whole operation with considerable intelligence and, although their architecture was not too good, the general effect will be pleasing and the homes substantial. They had adopted a parking pledge plan. Each buyer pays

Here is a one-bedroom home built on the multiple unit design and with assembly line methods.

$10.00 a year for parks and drives maintenance.

The bulk of the material for walls, floors, ceilings, roofs and partitions was plywood. The exteriors were of moisture and pest resistant plywood covered with shingles or clap-board. A local cabinet maker had the contract for built-ins, etc. The firm guaranteed to have a home ready for occupancy within seven days or, for a little extra, five days. They had several model homes, all of them occupied, for prospects to inspect.

This L-shaped prefabricated home comes in two and three bedroom models in the $7,000-$12,000 price range, including lot. It is Gunnison's "Catalina" model.

Any one of 24 combinations is available from GBH-Way Homes. Exterior and interior finishes are varied, giving them a custom built appearance. This is a two-bedroom home.

Inquiry disclosed that the sale of plywood was gradually on the increase in the area both by distributors and local manufacturers. This demand included all types of plywood with a good market for plywood faced with attractive veneers. Here we found that sample panels of special veneers—because of their beauty—helped greatly to sell this material for interior walls and partitions.

The high cost of living, taxes and general conditions are all responsible for the definite departure from home units that cost much over the $15,000

Yes, this is a pre-fab house. A product of GBH-Way Homes, Inc., Walnut, Ill.

Gunnison Homes, Inc., New Albany, Ind., have a great variety of plans available. Here one of their homes is being erected in record time.

mark. In fact, $10,000 is tops for the great majority of new home buyers today. When one gets much lower than that and expects to get a good building, every conceivable method of economy both in materials and labor has to be used. The exercise of various economies that do not detract from quality and design are most easily accomplished in pre-fab, pre-cut or a combination of both in home building.

The need for moderately priced homes is tremendous, and, with the elimination of many controls effecting home building including extended credit terms, there should be a real opportunity for all segments of the woodworking industry.

This new planning and building concept is being used more and more throughout the building industry. In conventional-built houses, modular planning has been used successfully to cut down costs. In modular design, the planner uses components which may be fitted together with a medium of waste material and low, on-the-spot labor costs. Standard sizes of windows and doors, standard roof trusses, standard lengths of lumber, cut in the shop or delivered to the shop already for use. These are among the things that enter the picture as labor-savers and these are among the things that manufacturers who specialize in making them can sell to the pre-fab builder.

Where the materials are readied by the pre-fab manufacturer, other than those just mentioned, a power saw with a jig to quickly cut a large number of pieces exactly the same gets the job done faster and easier and far more economically in a central location than if each piece is fitted separately and by hand on the building site.

The same principles are used in panel or sectional construction along the modular type. In these techniques, a house is designed to use inside and outside wall, roof and ceiling panels of plywood. These panels are either supplied to the pre-fab manufacturer or are cut in precision jigs and prefabricated on his own assembly lines.

This panel engineered type of prefab construction permits a very wide

Sidewalls are up and the men concentrate on finishing up ceiling panels.

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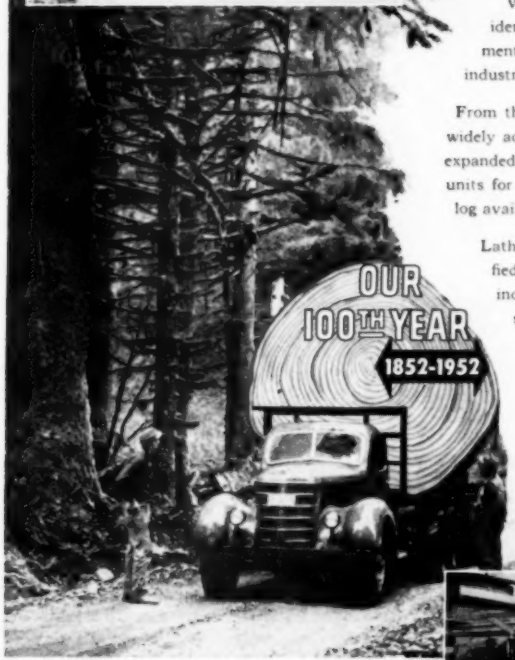

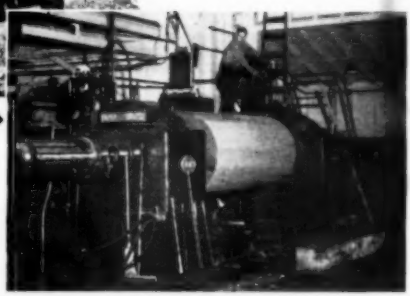

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latitude in room arrangements, size of the overall house, size of rooms, location of windows and doors, choice of basement or utility room models and exterior finish.

The flexibility of this technique is such that the prospective home builder can sit down with a man experienced in sectional or panel design and by arranging the various sections within certain limitations, achieve nearly any floor plan desired. Strangely enough, it has been found that the desired designs have been already worked out and plans for them are available. With this type of construction, many techniques are possible to provide both distinctive appearance as well as the savings possible with standardized panels, volume and precision-made at the factory.

As an indication of the flexibility of this panel type technique, the same plant can turn out anything from a very modest low-cost cottage 20 x 24 feet, or an elaborate, rambling ranch house structure with a main section 20 x 48 feet and an "el" on one end of 20 x 24 feet with a breezeway and attached garage and porch of 20 x 36 feet on the other end. To show just how complete and custom appearing such a home as this ranch house can be, one, recently completed near Indianapolis, Ind., includes the following: three large bedrooms and two bathrooms upstairs, on the first floor a spacious living room with a fireplace at one end with bay type picture windows on either side of the room. Kitchen, dining room and power and utility rooms complete the first floor arrangement. It also has a large recreation room in the basement. Standardized plywood covered (in and out) wall sections were used throughout and were delivered by truck.

In many prefab houses, partitions are planned to bear no weight so that the prospective home owner can plan his

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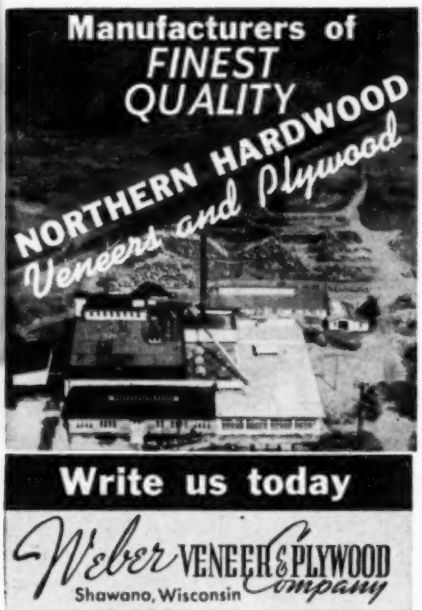

room arrangement with considerable latitude. It is a fact, however, that where the partition locations are regulated by the fact that they do carry some of the weight of the ceiling, roof or upper floor they cost less when all angles are considered.

Glazed windows and doors, located to suit the plan, are framed in the panels at the factory and hung or fitted in the frames. These doors and windows are usually obtained by the prefab builder from an outside manufacturer.

As I have said before, built-ins have moved out of the kitchen and provide a growing market for wood products manufacturers who wish to serve the prefab field. Mantles for open fireplaces, real or decorative; bookcases of the unit type that can be arranged around piano, TV set, head-of-the-bed or as a window seat; built-in chests of drawers and bureau combinations; dinette sets of tables and benches—these are mostly plus equipment but are sold in large quantities.

The new home building methods evolving from and through prefabrication are bringing greater fields for plywood cut to measure and standard designed furniture. Investigate your local situation, you may have opportunities within your own community to get into this new type of home building.

NEW LAMINATING RESIN

An improved, low cost, unextended phenolic laminating varnish called Synco 115 is announced by the Snyder Chemical Corp., Bethel, Conn. The primary advantages are faster treating, low stack loss, freedom from curling and excellent flow within minimum pick up and low volatile content ranges, we are told. Synco gives hard, tough laminates having dimensional and water resistant properties, it is said.

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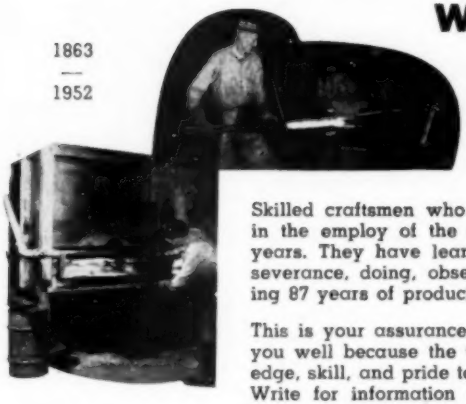

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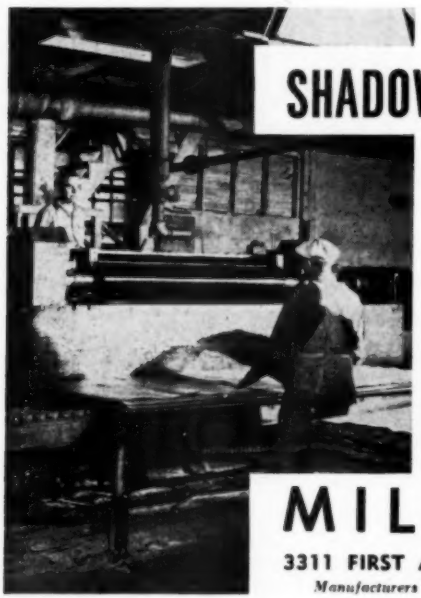

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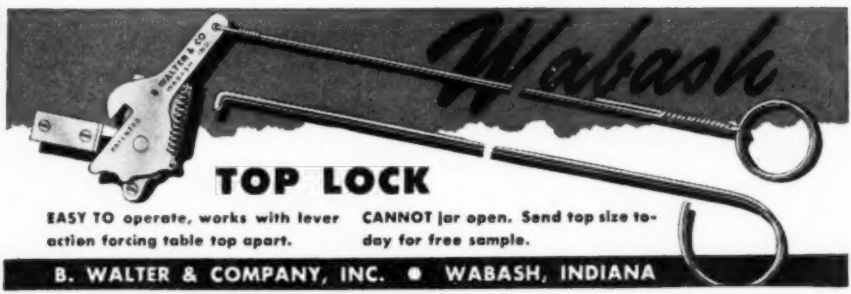
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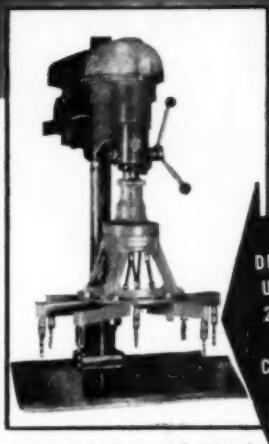

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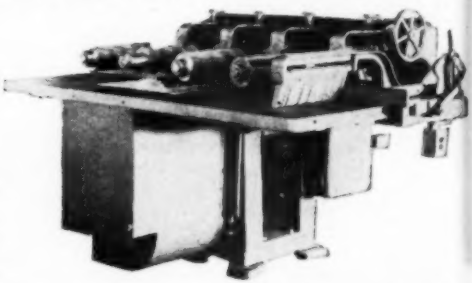

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DOES WEIGHTING OF KILN LOADS REDUCE WARPING?

This month's report has been prepared by O. W. Torgeson, Engineer, Forest Products Laboratory, Forest Service, U. S. Department of Agriculture, Madison 5, Wis.

IT is safe to say that the annual loss of lumber due to warp is considerable and that, in some cases, it constitutes the major loss in the seasoning operation. Warping is caused mainly by the inherent shrinkage properties of the wood and cannot be avoided entirely. Some warping, however, can be prevented by taking precautionary measures.

In piling lumber, the following practices should provide proper support and protection and freedom from any external forces that might cause warping:

1. Place stickers in exact alignment over good foundation members.

2. Use close spacing between stickers, such as 16 inches.

3. Use stickers of uniform thickness.

4. Avoid big variations in board thickness in any one layer.

5. Use cover boards if protection from sun and rain is needed.

6. In drying random-length lumber, avoid unprotected and unsupported overhanging ends by sorting for length or by box piling.

7. Provide some weight on top of the pile to hold down top layers.

The results of some experimental work on weighting the top of the pile will be discussed in this article.

The possible effectiveness of measures for preventing warping can be understood best by knowing the inherent characteristics of wood that cause it.

Definition of Kinds of Warp

The several kinds of warp are defined as follows:

Bow—Deviation flatwise from a

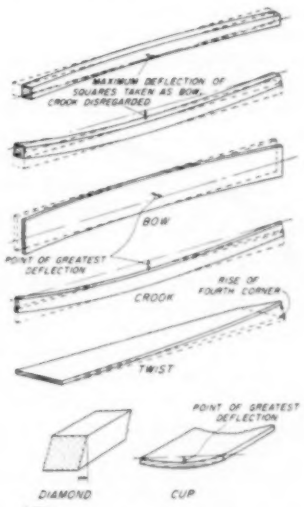

Fig. 1. Different kinds of warp.

straight line drawn from end to end of a piece of wood.

Crook (sometimes called spring)—Deviation edgewise from a straight line drawn from end to end of a piece of wood.

Cup—Deviation crosswise from a straight line drawn from edge to edge of a piece of wood.

Twist—Distortion caused by the turning or winding of the edges of a piece of wood so that the four corners of any face are no longer on the same plane.

Diamond—Distortion in which a piece of wood that was originally rectangular in cross section becomes diamond-shaped.

Examples of the different kinds of warp are given in Figure 1.

Inherent Causes of Warp

Inherently, the warping of wood during drying is caused by the shrinkage that occurs with changes in moisture content. Shrinkage, however, is not the same in all directions of the grain. Shrinkage parallel to the annual rings (tangential shrinkage) is, for most species, nearly twice that across the rings (radial shrinkage). Shrinkage lengthwise of the fibers is very small as compared to transverse shrinkage. Because of these differences, wood with distorted or irregular grain tends to warp more than that with straight grain.

Figure 2 shows that, in a flat-sawed board, the annual rings are more tangential to the face nearest the outer portion of the tree than to the one nearest the pith. Cupping, therefore, is in the direction towards the bark, because of the greater shrinkage in the tangential direction than in the radial direction. The difference between the angle made by the annual rings with one face of a board and that made with the other face is greatest in lumber cut from small logs or from near the pith. This helps to explain why warping is usually greatest in lumber cut from small, second-growth trees.

As these inherent shrinkage differentials are the most direct cause of warping, irregular or cross-grain stock can be expected to warp considerably during seasoning. Where fibers are not parallel to the length of the board, the relatively great transverse shrinkage, acting in the longitudinal direction, is very apt to cause some bow, crook, or twist. This is why lumber from crooked logs has a tendency to warp.

Effect of Kiln Drying Schedule

As a warp-control measure, the par-

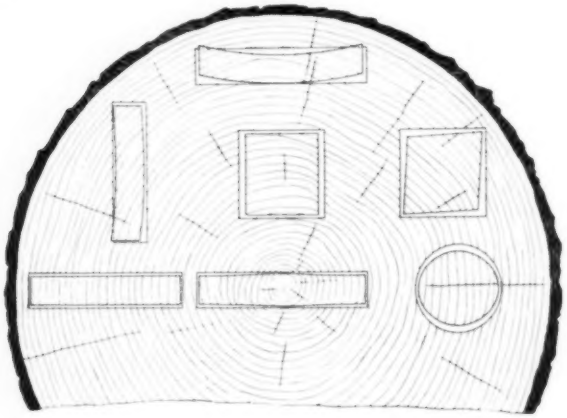

Fig. 2. Characteristic shrinkage and warping of flats, squares and rounds as affected by the direction of the annual rings. The dimensional changes shown are somewhat exaggerated.

Table 1.—Kiln schedule used in drying 1"x10" blackgum boards

Temperature	Plain-sawed		Quarter-sawed	
	Relative Humidity	Time	Relative Humidity	Time
°F	Percent	Hours	Percent	Hours
160	70	24	58	24
170	50	24	45	24
200	30	40	30	22
	Warp measurements taken			
170	77	17	77	17
(Conditioning treatment)				
	Warp measurements taken			

ticular kiln schedule used is not of great importance. Tests have indicated that the effect of the schedule on warping is not great within the range of temperature and relative humidity conditions usually used in kiln drying hardwoods. A low temperature and low relative humidity schedule is usually best, since, by causing a steep moisture gradient, it sets the surface in such an expanded condition that final over-all shrinkage and therefore warping are reduced. Very low initial conditions of relative humidity, however, may cause surface checks and should be used only when the stock being dried will take such conditions or can be inspected closely and frequently during drying.

Reduction of Warping

It is commonly known that a certain amount of restraint is helpful in reducing warping, especially in the top layers. Where such warping is a problem, some operators use bolted or spring clamps, while others simply place some weight on top of the pile.

The question has often arisen as to the amount of pressure that is needed. Warp measurements of 2¼- by 3-inch sugar maple in an unweighted, commercial kiln truck, after the maple was dried to about 6½ percent moisture content, indicated that the weight of the stock reduced bow and twist down to the fifth layer. Below that layer, no further reduction was noticeable. The amount of crook (lateral deflection) did not differ significantly from the top to the bottom of the pile.

Some experimental warp data were also collected in kiln drying 1" x 10" blackgum, 3', 6' and 12' in length. The test material consisted of 3 groups of 10 plain-sawed and 10 quarter-sawed boards of each length. The 3 groups were weighted, respectively, with approximately 30, 90 and 150 pounds per square foot, so as to simulate the average pile weight on the top 20 layers, on the second 20 layers, and on the bottom 20 layers of a regular kiln truck of lumber 60 layers high. These weight values correspond to those of blackgum in the final stage of drying, when the lumber weighs about 3 pounds per board foot.

The kiln-drying conditions used are given in Table 1. The original moisture content of the blackgum boards was about 95 percent and the final moisture content about 7 percent.

Effect of Weight on Unit[1] Warp

Plain-sawed boards—The effect of increases in weight above 30 pounds per square foot was most significant with respect to cupping. On the basis of the data from these tests, the average amount of cupping in the bottom 20 layers can be expected to be about one-half of that in the top 20 layers and that of the middle 20 layers about midway between the top and bottom averages. The effect on twisting, bowing and crooking was much less significant, but the average amounts for these also indicated the same general trend in the three groups of layers.

Quarter-sawed boards—The effect of weight on the twisting, bowing, and crooking of quarter-sawed boards was

[1]—A board segment 1 foot long and 10 inches wide.

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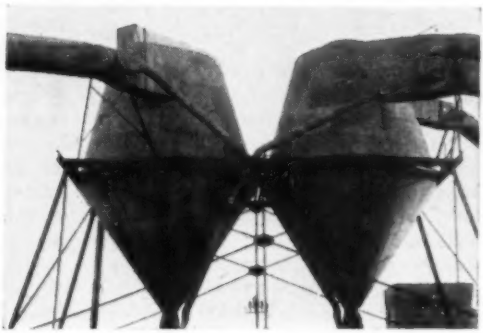

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slight and somewhat inconsistent and therefore of no practical significance.

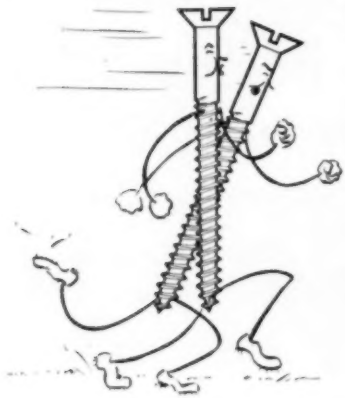
Effect of a Conditioning Treatment

Plain-sawed boards—The conditioning treatment had little, if any, effect on bowing, crooking, and cupping, but was somewhat effective in reducing twisting.

Quarter-sawed boards—The conditioning treatment did not reduce bowing and crooking of quarter-sawed boards, but a slight reduction in twisting was indicated. The effect on twisting, however, was less than that shown for plain-sawed stock.

Effect of Length on Unit Warp

Plain-sawed boards—Twisting per unit length was very significantly affected by the length of the board during drying, particularly after the conditioning treatment. The average twist of a 1-foot segment from the 3-foot boards



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was approximately twice that of a 1-foot segment from the 12-foot boards. Average bow and crook were also greatest in the shortest length boards, but, statistically, the results were much less significant than those for twist because of greater variability. The effect on cupping was least significant, as might be expected.

Quarter-sawed boards—The twisting and crooking of the quarter-sawed boards were significantly affected by length and were greatest in the shortest length boards. The effect on bowing and especially on cupping was too slight to be given consideration.

Twisting was nearly two times greater and bowing was considerably greater in plain-sawed boards than in quarter-sawed boards, while the difference in crooking was less significant.

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Importance of Proper Moisture Content and Storage Conditions

To reduce warping after seasoning, it is important to dry the lumber to a moisture content that is suitable for its use requirements. If the lumber is too wet, it will continue to warp upon any further drying. If too dry, it will not only have warped more than necessary during the drying process, but will very likely change shape during any subsequent moisture regain. Improper storage conditions for the dried lumber or fabricated articles may nullify, to some extent, the care taken in drying.

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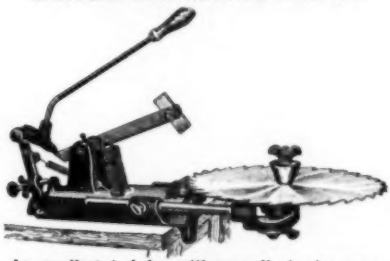

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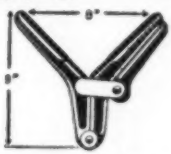

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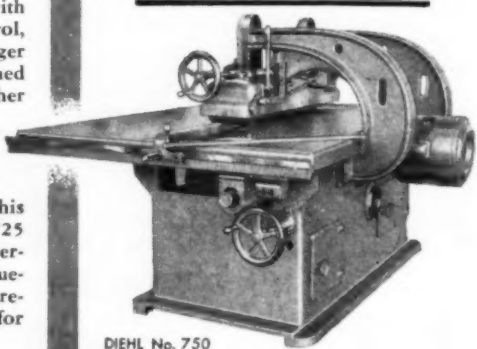

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CUTTERHEADS

A new condensed, 20-page Diehl Cutterhead Catalog is now available from the G. M. Diehl Machine Works, Inc., Wabash, Indiana, precision woodworking machine manufacturers.

Printed in convenient pocket size, the new Diehl catalog is a quick source of reference for all fabricating departments in woodworking industries. A special section features glue joints, with cross-section illustrations, as an aid to both cutterhead and knife selection.

The Diehl program of manufacturing both stock design and special cutterheads to make unusual patterns, is explained and illustrated. Also listed are milled-to-pattern knives, sleeves, collets and collars, shaper steel, saw segments, clamps and other accessories.

The two most popular cutter-grinders in the Diehl line are also described, with specifications and performance characteristic of each.

The book describes methods by which Diehl design engineers have joined with metallurgists and production specialists in applying practical experience to solve woodcutting problems for over 40 years.

SANDING BULLETIN

"Better, Faster Finishing for Production and Maintenance Jobs" is the title of a new bulletin, No. 2109, on industrial sanding applications published by the Pneumatic Division of Sundstrand Machine Tool Co., Rockford, Illinois.

The colorful, informative bulletin covers three major subjects—(1) advantages of straight-line sanding action; (2) illustrations showing how air sanders are used for a multiplicity of operations in the plant; and (3) specifications on the four models of Sundstrand air sanders and accessories.

Advantages of straight-line action (pad moves back and forth in a straight line like hand sanding, instead of a circular motion) are said to include the elimination of swirls, scratches and pressure marks, the use of faster-cutting, coarser grit sandpaper to reduce sanding time, the minimizing of vibration which permits the operator to produce more with less fatigue, the use of the sander next to edges, moldings, and in tight corners, and the elimination of hand sanding for final finishing. There are a number of sander models available.

HEINEMANN SAW CATALOG

The F. Heinemann Saw & Mfg. Co., Canton 6, Ohio, has issued a very fine catalog on their products. A number of pictures are included, showing the different types of saws. Under each picture is a chart giving standard stock sizes. More than 15 different blades are pictured and described.

The catalog also outlines the manufacture of the saws as well as explaining procedures for ordering special blades. Special saws range from 4" to 16" in diameter in various thicknesses and tooth shapes.

WOOD SCREWS

The new Twinfast wood screw is now being produced by the Townsend Company, New Brighton, Pa.

The driving speed of the Twinfast screw is demonstrated by the fact that a No. 10 screw with 30 threads is seated in 15 turns of the driver; while a standard No. 10 screw, which also has 30 threads, will require 30 turns for complete seating, it is claimed.

The Twinfast screw has parallel sides, is not tapered, and therefore has more thread area in contact with the material to give greater holding power. Also, as the shank or unthreaded portion of the Twinfast screw is the same diameter as the thread pitch, it eliminates the wedge action of the standard screw.

The two threads of the Twinfast screw come together in a sharp, single point that makes possible a self-centered start for straight driving, we are told.

The Townsend Twinfast screw is made of steel or brass in all standard sizes with flat, round and oval head styles, either slotted or Phillips cross-recessed. A new bulletin describing the Townsend Twinfast screw is available upon request.

SPECIAL MAINTENANCE COATING BULLETIN

A 4-page bulletin describing a dozen different special coatings for plant maintenance use has been issued by United Laboratories, Inc., 16801 Euclid Ave., Cleveland, Ohio. This new literature describes the use of various industrial products for solving such problems as skidproofing, rust prevention, painting over damp areas, weatherproofing and decoration of exterior masonry, interior waterproofing, painting over hot surfaces, protection against acids, chemical fumes and other special maintenance work. The numerous problems are listed in the folder followed by brief suggestions as to the solution. This bulletin is available without charge upon request.

PREVENTIVE MAINTENANCE BOOKLET

A 28-page booklet now available from the Westinghouse Electric Corp., gives a complete outline of the sucessful institution of preventive maintenance program for any industry.

The booklet discusses general preventive maintenance programs, designed to reduce shut-down time on production lines, and treats in considerable detail the most important ingredients of production line apparatus—power equipment.

A suggested schedule of work and cleaning on power equipment is presented in chart form.

For a copy of this booklet, B-5477, write Westinghouse Electric Corp., Box 2099, Pittsburgh 30, Pa.

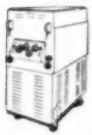
FOLEY EQUIPMENT

Folders which discuss the various models of saw sharpeners and gummers, filers, setters and retoothers together with prices and shipping weights are available from the Foley Mfg. Co., 3300 Fifth St., N. E., Minneapolis, Minn. Listings of the different features of the equipment and illustrations are included.

The automatic centering of the saw insures identical hook and bevel with every tooth. A centering device for emery wheels insures true level cutting across the saw, regardless of wear on the emery wheel. The grinding head is equipped with swivel bearing which

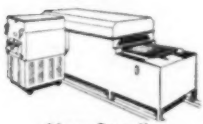
Are You Spending Hours to do a 30 Second job

Could be . . . unless you're using modern electronic gluing and laminating methods.



Mann-Russell RF Generator

Mann-Russell Veneer Edge-Gluer



Mann-Russell Lumber Edge-Gluer

Speed production — cut costs — with Mann - Russell Electronic equipment — generators, patchers, lumber and veneer edge-gluers. All units custom-designed to meet your particular needs and installed by factory-trained experts.

If your production calls for gluing up short lengths, edge-gluing hard or soft wood veneers, or other lamination — write today for specific data, outlining your problem.

Mann-Russell Electronics

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NORTHWEST SYNDICATE, INC.
1321 A STREET, TACOMA 1, WASHINGTON

slides on a vertical rod and keeps emery wheel centered perfectly above the saw. The Foley retoother cuts new teeth on handsaws in three minutes. The automatic saw filer files and joints hand, band and circular saws automatically we are told.

PANELING SPECIFICATIONS

The Woodwelding Company of Burbank, California, has published three pages of specifications to be followed when applying paneling with their Woodwelder hand gun. These specifications give certain procedures and precautions for various species of wood. The outline includes pre-finished plywood application, outside paneling and a list of a dozen additional uses for the Woodwelder.

A copy of the specifications and utilizations for the gun are available by writing Woodwelding, Inc., Burbank, Calif.

SPECIAL or STANDARD SAWS ★

HEINEMANN MAKES THEM ALL

★ **STANDARD SIZES 6″ to 36″ DIA.**
SPECIAL SIZES 4″ to 24″ DIA.

ANY THICKNESS, SIZE AND TOOTH STYLE

WRITE FOR CATALOG No. 20

The F. HEINEMANN SAW & MFG. CO.

CANTON 6, OHIO

BLOWER SYSTEMS FOR WOODWORKING PLANTS

This is the title of a very interesting and informative catalog from the Kirk & Blum Manufacturing Co., 3120 Forrer St., Cincinnati, Ohio. In their many years in business, Kirk & Blum blower engineering has kept pace with industry.

The catalog includes many pictures, showing the installations of their dust collecting systems in various companies. These photographs illustrate how Kirk & Blum designing has followed along with the development of woodworking methods; how the fundamental principles of blower design have been applied effectively to the machines and problems of large scale woodworking operations, cutting production costs and functioning to maintain profitable, continuous production.

The record of firms installing Kirk & Blum equipment includes companies

a UNION machine . . .
TO MEET ANY WOOD GLUING NEED

Union makes equipment for every standard production job in wood gluing. Also designs and makes machines for special applications—including machines for electronic gluing.

Write for data on the complete Union line of wood gluing equipment.

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Name of Union agent in your territory supplied on request.

UNION Model No. 11 CONVEYOR GLUE SPREADER

With electric eye!

Designed to facilitate edge gluing of core stock or similar products. Glue supply pan is jacketed for cooling resin glues or maintaining heat on animal glues. Electric eye is used for automatic stop control. Infeed conveyor, 60" long. Outfeed, 96" long. Height can be 34" or 42". Other sizes available on request.

NOTE: Any Union spreader is available equipped with rubber-covered doctor roll, if desired, at no extra cost.

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UNION TOOL CORP.

300 EAST MARKET STREET

WARSAW, INDIANA, U. S. A.

Write for your free copy, "The How's and Why's of Wood Gluing," by Thomas D. Perry.

•

USERS SAY UNION CUTS COSTS — SPEEDS PRODUCTION

making: automobile and airplane wood parts; barrels, boxes and crates; caskets; furniture; implement and machinery woodwork; millwork; lumber and flooring.

ANSWER BOOK ON PENTA WOOD PRESERVATION

Detailed answers to questions frequently asked about pentachlorophenol, a chemical widely used to protect wood against decay and insect attack, are contained in a 40-page booklet made available by Monsanto Chemical Co., 1700 S. Second St., St. Louis, Mo.

BULLETIN ON MARINE LAMINATING

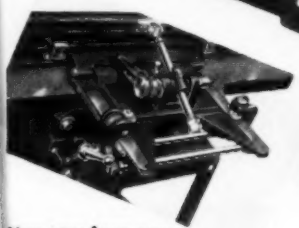
Snyder Chemical Corp. announces the publication of a new bulletin entitled "Instructions for Intermediate Temperature Marine Laminating of White Oak with Synco 128-CLW Resin Adhesive."

This leaflet outlines new advantages of longer permissible open and closed assembly time, long working life and ease of handling. This adhesive is particularly suited for high frequency, room and elevated temperature gluing, we are told.

The bulletin is available upon request from the Snyder Chemical Corp., Bethel, Conn.

NOW BETTER THAN EVER

For NEW SPEED and ACCURACY in Joining Work



New type fence mount assures fast set up — greater rigidity and accuracy.

Cutter head removes for sharpening blades without disturbing their setting.

Atlas 6" Jointer

The *extra* features of this new Atlas jointer-planer save real time and money in every joining operation. Tables and fence are close tolerance ground to a mirror-smooth finish. The table surface has guaranteed alignment of .005" over-all! The new Atlas 32" x 4½" fence (bigger than many 6" jointer tables) is *triple-supported,* absolutely rigid, easy to position. Add Atlas *simultaneous blade height control, removable cutter head, and width-of-rabbet scale,* and you see why Atlas is today's outstanding jointer value. Send for catalog.

ATLAS PRESS COMPANY
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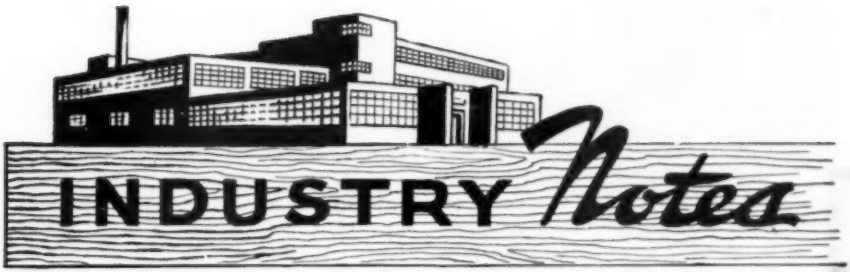
DEPENDABLE QUALITY TOOLS SINCE 1911



ELECTION NEWS

The Association of Manufacturers of Woodworking Machinery met at The Homestead, Hot Springs, Virginia, April 25, for their 52nd annual meeting. Ray C. DuBrucq was re-elected president of the association. Mr. DuBrucq, formerly general manager of the Crescent Machine Division of the Rockwell Mfg. Co., has been representing his company in Washington for the past year and a half. He has been an able spokesman for the woodworking machinery manufacturers in the nation's capital.

Other officers also re-elected for the current year include: J. H. Petter, Buss Machine Works, Holland, Mich., vice president; F. G. Walker, Jones Superior Machine Co., Chicago, Ill., treasurer; George F. Newman, Jr., Newman Machine Co., Greensboro, N. C., secretary.

Professor E. Sigurd Johnson, North Carolina State College, presented a talk on courses offered at the school. The two-day conference consisted of reports on various phases of the association's activities and effects of the Defense Program as well as discussions of current business conditions and the future outlook.

NEW OFFICES

A new technical service laboratory and offices for management, sales and office personnel have been opened by Reichhold Chemicals, Inc., at the company's Midwest Division (Argo) plant located at 7738 West 61st Place, Summit, Ill. Total floor space spread over two stories approximates 9,000 square feet.

NEW QUARTERS

The Gaynes Engineering Company announces that on or about June 1, 1952, they will move into new and more spacious quarters located at 1642-1652 W. Fulton St., Chicago, Illinois.

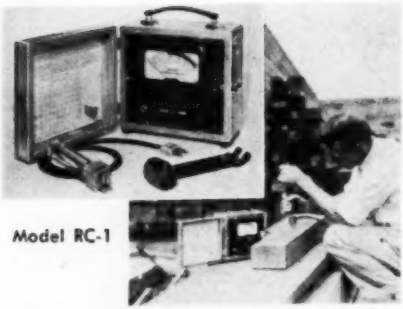
This modern, one-floor brick building with a floor space of over 12,000 square feet was designed specifically for the efficient handling of new and used wood and metalworking equipment and the fabrication of special machines.

INDUSTRIAL FINISHING EXPOSITION

More than 100 new products will be shown in the great industrial finishing exposition scheduled for June 16-20, at the International Amphitheatre, Chicago, Ill. Heretofore the show has been limited to the display of base metals and chemicals, plating and polishing equipment and associated products. This year manufacturers of paint, lacquer, enamels, ovens, spray painting equipment and temperature controls have been invited to exhibit.

SHOWROOM MODERNIZED

Waltman Associates have completely redesigned the front and interior of the Kling Factories showroom in the American Furniture Mart in Chicago. Kling was a charter showroom occupant when the Furniture Mart opened in 1924. The present showroom, one of the largest in the building, has been occupied by Kling since 1940.



Model RC-1

Delmhorst Moisture Detector has "paid for itself time and again"

Says Mr. Herbert Seidel
Reisen Hardwood Lumber Co., Union, N. J.

"We have been using the Moisture Detector for approximately four years in our air drying yard and in conjunction with our dry kilns," writes Mr. Seidel. "We use it constantly to check the moisture content of incoming lumber, to select air dry stock from the yard stacks and to check outgoing orders.

"In the kiln operation, the Moisture Detector has proved to be a necessity (especially when used with the 26E electrode) for making many quick checks on lumber entering the kilns. Its use in this connection saves the kiln operators hours in starting a new charge in the kiln, and, of course, no kiln charge is considered complete until a check-up has been made with the Moisture Detector to determine the uniformity of the kiln drying.

"Our engineers like this instrument because it is compact, easy to carry about, and the direct reading dial saves time by eliminating corrections and calculations. . . . We know that it has paid for itself time and again in every operation of our business that requires knowledge of lumber moisture content."

Moisture Detector Advantages

Note the advantages of the Delmhorst Moisture Detector:

- Quickly and accurately measures moisture content of any wood product from 6-65%
- Direct reading in percentages on large 4½ inch dial. No calculations required.
- Interchangeable electrodes for multi-purpose use.
- Ideal for dry kiln testing — wet cores can be tested without cutting lumber.

Send for complete information. Fill in the coupon and mail it today.

DELMHORST INSTRUMENT COMPANY
607 CEDAR STREET • BOONTON, NEW JERSEY

☐ Please send complete information.

Name.....

Firm.....

Address.....

City and State.....

Appointments

Richard A. Moore has been named Director of the Chicago Technical Service Department of the Sherwin-Williams Company. He has been with the company since 1939.

Prefabricated Home Manufacturers' Institute has appointed **Paul Schnable** of American Houses, Inc., New York City to their cost accounting committee.

James E. Ashman and **L. A. Dixon** have been elected vice presidents of the Rockwell Manufacturing Company, Pittsburgh, Pa. Mr. Ashman will be in charge of the Power Tool and Rockwell Register Divisions. Mr. Dixon is vice president of the company's meter and valve divisions.

Clover Manufacturing Co., Norwalk, Conn., has appointed **Russell E. Foster** as abrasive sales engineer. The firm manufactures coated abrasives, lapping and grinding compounds.

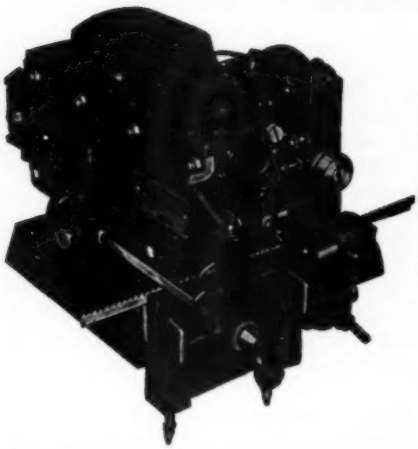
Black & Decker Mfg. Co. has created five district sales territories. Those appointed to fill the positions of sales managers for these territories are: **E. M. Stuart,** northeastern; **A. Lee Proctor,** southeastern; **Raymond G. Horner,** central; **Wm. L. Poynter,** midwest; **Arthur S. Boshm,** Pacific coast; and **Donald S. McKeracher** for Canada.

John C. Clay has been named Director of the Containers and Packaging Division of the National Production Authority. Mr. Clay is on leave as assistant to the executive vice president of National Starch Products Inc., New York City. The firm manufactures industrial adhesives and synthethic resins.

DuPont Company's Finishes Division states that **Bert A. Gittins** has joined the firm as a wood finishing engineer at their service laboratory, Greensboro, N. C.

The Forest Products History Foundation, national repository of American forest history, at St. Paul, Minn., has named **John W. Larson** as its business records manager. **Elwood R. Maunder** is its executive secretary and publicist.

CLAMP SAW IN VISE
K5 DOES THE REST



Files, sets, joints in one operation

K5 Band Saw Filing Machine files, sets and joints band saws with absolute uniformity. The result will be quickly noticed in cleaner, faster cutting and longer period of service obtainable from each blade.
K5 requires no further attention after the saw is clamped in the vise. The blade is automatically clamped while being filed and set. Its speed is the equivalent of four men working by hand and replaces two separate machines formerly required for this work. For details write for Bulletin on K5 Band Saw Filing Machine. Wardwell Manufacturing Company, 3161 Fulton Road, Cleveland 9, Ohio.

WARDWELL

Maker of the largest line of saw and tool sharpening machines

O. C. E. TRIMMERS ROUTER BITS

O.C.E. Router Bit

Solve the problems encountered in working formica and other plastic covering with CARBIDE TIPPED O.C.E. Tools.

Trimmers—Fit any $\frac{1}{4}$" router spindle. Straight face for flush trimming or 10° taper for self edging.
Router Bits—Double flute $\frac{1}{16}$" to 1" cuts.

Clean, fast trimming of linoleum, plastic, veneer, etc., after gluing. No other finish necessary.

Dealers In Principal Cities

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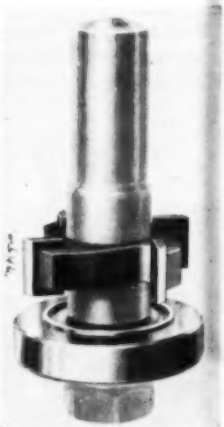


O.C.E. Trimmer and ball bearing roller guide. (Spindle not included)

Sixth Annual Meeting Forest Products Research Society

Milwaukee, Wisconsin, has been chosen as the site for the sixth meeting of the Forest Products Research Society. The organization will convene at the Schroeder Hotel, June 23-26.

The four-day convention will feature nine technical sessions with many outstanding authorities speaking on such subjects as materials handling; furniture manufacturing; furniture finishing; barking methods; housing and construction; veneer and plywood and allied forestry subjects.

Several interesting field trips have been planned. On Wednesday, June 25, the Allis Chalmers Mfg. Co., West Allis, Wis., will be open for inspection. Another choice for this same day is a conducted tour through the Harnischfeger Prefabricated Homes Plant in Port Washington, Wisconsin. Thursday busses will leave for the 90-mile trip to the U. S. Forest Products Laboratory at Madison.

The election of men to national and regional posts will be included in the business meeting.

All of the committees have worked intensively for the success of this program and it should be a very worthwhile meeting for anyone working in the forest industries.

Heston and Anderson announce fastest Cut-off Saw on the Market!*
The answer to top-speed production for your plant or work shop.

Cuts Wood, Metal or Plastic!

An exclusive new **automatic air unit** makes possible the super speed of the Heston & Anderson Swing Saw. May be used with wood, metal or plastic. Compact and sturdy, its superb construction insures accuracy with every cutting. Easy to operate! Here is truly the finest equipment for your plant or workshop.

Write Today!

Write for FREE literature . . . name of nearest authorized dealer.
*Thirty-three wood cuttings per minute during routine plant tests.

HESTON & ANDERSON
Division of St. Paul Foundry and Mfg. Co.
11-1A FAIRFIELD, IOWA

NEW STRIPPER

Black Brothers glue spreaders can now be equipped with a positive arrangement for stripping cross-banding from the applicator rolls when passing through with grain parallel to the roll shafts. The extra rigid fingers are arranged with a micrometer adjustment and positive stop to limit travel.

The fingers are broad to eliminate resilient roll damage and designed to remove 1/20" stock from the roll surface with ease. They are readily removed from their sturdy support, giving the same ease of cleaning as exhibited on the regular arrangement. Additional information is available from the Black Bros. Co., Inc., Dept. R. C., Mendota, Illinois.

FLOOR BOOKLET

A new booklet published by the Maple Flooring Manufacturers Association outlines the important steps and necessary precautions to take in laying hardwood floors.

Single copies of the booklet, "How to Lay Lifetime Floors of the Northern Hardwoods," are available without charge from the association, 548 Pure Oil Bldg., Chicago 1, Ill.

Got a Problem... Hmmm?

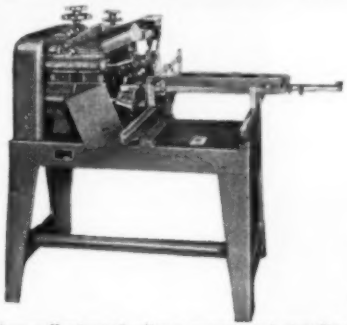
If you're having hinge, hasp, catch, clamp, draw bolt or other hardware trouble on your wood or metal products—maybe we can help you.

Since 1898, we've made almost 7,000 items of hardware and, if there isn't anything in our line that meets your current needs, we're equipped to work with you to develop special designs.

Why not drop us a line—today?

THE LANGENAU MANUFACTURING CO.
8403 Franklin Boulevard • Cleveland 2, Ohio

HARRIS
DELUXE FLOOR MODEL TENONER



New adjustment allows exact and simultaneous adjustment of tenon spindles.
3 H.P. Motor.
3 Inch Blades
V Belt pulley drive on both tenon and cope spindles.
Heavier Construction for greater accuracy.

MILLBURY MACHINE COMPANY
13 WATERS STREET MILLBURY, MASS.

Nutting's 61st Year

Fig. A

A NUTTING VETERAN

A husky, long lived truck at a low price. Semi-steel running gear — 13½" diam. main wheels that roll easily—6½" casters that really swivel. Northern hardwood, rigid frame, platform 15" above floor. Platform sizes 27 x 48, 27 x 54, 30 x 60.

Write for Bulletin 47-W

Nutting Truck & Caster Co.
1128 Division Street Faribault, Minnesota

Supreme BAND SAWS

END YOUR TROUBLES

SUPREME BAND SAWS cut faster... have increased cutting capacity with minimum breakage! Present day high speed equipment demands Supreme Saws. Free from kinks and imperfections. Made from the finest Special Nickel Alloy Steels, tempered for toughness ...to stay sharp! There is a Supreme Band Saw for every industry... for every material. Special purpose saws are made to order.

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THE SAW & KNIFE SPECIALTY CO., INC.

EXTENSION TABLE ENGINEERING

TABLES that work better sell better. Wabash Slides engineered to the table assure smoother operation, easier upfitting and offer many other important advantages. You can have your table construction styled by specialists at no extra cost. We manufacture all types of Slides, Folding Leaf Equipment, and Top Locks.

Assure Smooth Easy Extension

Write **Today for Free Engineering Consultation Blank**

B. WALTER & COMPANY, INC., WABASH, INDIANA

Walter of Wabash

Automatic Flash Welding

By H. J. Chamberland

WITH the choice of a new piece of equipment, productivity and versatility need not necessarily be inseparable factors and this applies indeed to the automatic flash welder to be briefly described in this article. In the average woodworking plant, for example, a dozen or so diversified applications for the device could present themselves in the course of a day's work, whereas in a metal fabricating shop it would be used for production welding more or less.

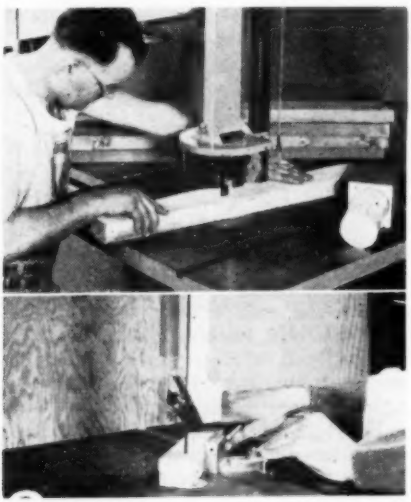


Fig. 1. Two band saw blades operating at 5000 fpm. However, top blade is 1" wide and bottom blade is 3/8" wide. Both blades require a different welding heat and since the variation is often one of split-second accuracy, the welding cycle must necessarily be automatic to be foolproof.

In the long run, the flash type welder is most economical and practical and because of its 8 KVA transformer capacity it is adapted to the welding of any band width up to 2". Furthermore, this particular welder is provided with removable auxiliary jaws for welding rods and bars up to 5/16" in diameter and is therefore most appreciated in many plants these days for solving varied experimental and maintenance problems regularly developing.

Butt welding should not be confused with flash welding, a butt weld refers to a fuse joint whereas a flash weld is an arc welded and more dependable joint. Flash welding is fast becoming the industrially accepted method of joining saw bands because accuracy and strength are essential regardless of width and operating velocity. The fact remains that the importance of weld efficiency increases with increased width of blade and speed. As for example, it is obvious that a 2-in. band resawing in two a 2-x-8-in. plank at 6000 rpm. or a 1-in. band friction cutting 3/4-in. boiler plate at 15,000 fpm., with heavy work feed, requires a weld far more secure than a 1/2-in. band operating at 100 fpm. and only subjected to limited work pressure.

The most accurate and strongest weld is one, although discernible, that incorporates the same internal and external characteristics as any other section of the band. Maximum efficiency in this respect is based on three re-

Mr. Chamberland is research engineer for the DoAll Company, Des Plaines, Ill.

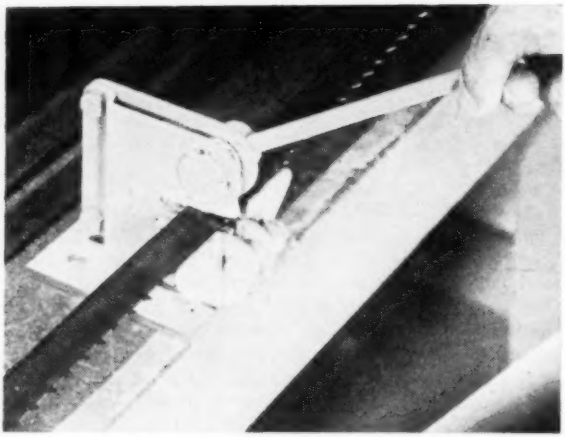


Fig. 2. Squareness of ends to be joined is a prime requisite for a dependable weld and a cut-off shear is most dependable.

quisites: (1) automatic control of the actual welding cycle; (2) selective annealing heats as predetermined on the basis of width and thickness of band or flat stock, or corresponding area; (3) at least an elementary knowledge of the effects of said heat on the completed weld. It should be mentioned before we proceed further that rod welding does not differ from band welding except for allowing a 1/16" gap between the parts. This distance has been determined as most practical to provide the correct pressure for coordination with the predetermined advancing distance of the movable electrode.

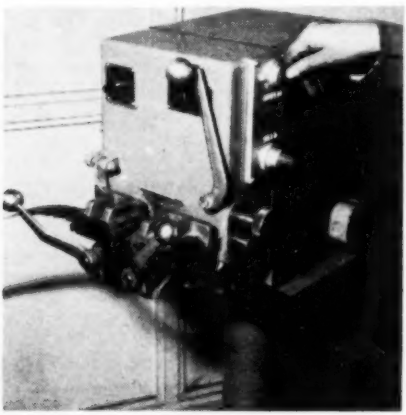


Fig. 3. Proper annealing is the controlling factor of weld strength and failure in this respect renders the automatic features of the unit worthless.

The first step to efficiently weld saw bands, steel tape or rods is to accurately square both ends to be so joined. Ends of saw bands or similar flat stock should preferably be squared with a cut-off shear such as illustrated, the welder grinding wheel will serve to square the ends of rods used for extensions and remove flash from all welds. It is also imperative that the ends of the saw band be perfectly aligned against the edge of the terminals; in short, misalignment coupled with inaccurate squaring will result in an overlapped and incomplete weld not likely to hold. Since the auxiliary rod welding jaws are of Vee design, alignment in this instance is of no concern. After properly aligning and securely clamping the band ends or rods, one is ready to proceed with the welding.

As the welding switch button is

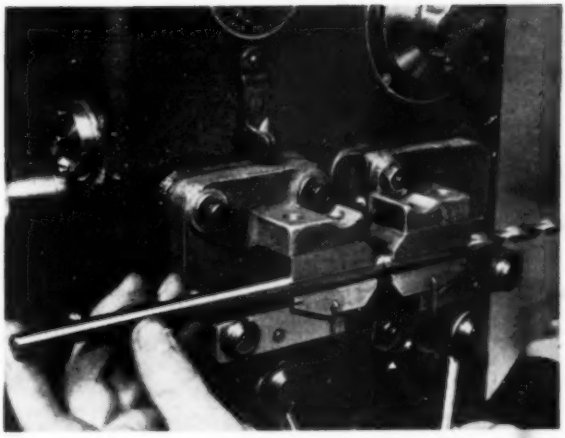


Fig. 4. Welding 5/16" rod extension to 5/16" drill. Other typical rod welding applications are bits, screwdrivers, counterbores, grinding wheel points and many tools.

pressed, proceeding adjustments based on band width or diameter of rod, the correct amount of heat is applied, the movable electrode advances the proper beading distance and the current is automatically cut off at the exact time. However, the annealing operation is not accomplished under a similarly 100% controlled condition and therefore simply pressing the annealing switch button doesn't mean a thing unless certain recommendations are adhered to. Improper annealing is one of the chief causes of weld failure and the following suggestions will help materially.

Experience has shown that an annealing temperature of 950 to 1100 degrees F. will reduce the hardness sufficiently. It will also prevent any tendency toward rehardening or embrittlement of the weld caused by a too rapid cooling rate. Proper annealing temperature can better be obtained by joggling the annealing switch, thus giving the weld short surges of heat of 10 to 20 seconds duration or until the joint just begins to glow a very faint blood red. The glow should not be allowed to become brighter and is not visible in a lighted room until the temperature reaches 1200 degrees. This heat is definitely too high for safe annealing and consequently some means of shading the weld should be used so the glow will become apparent at 950 degrees.

Saw bands of different makes and types frequently require different welder adjustments to compensate for variance in chemical composition. This

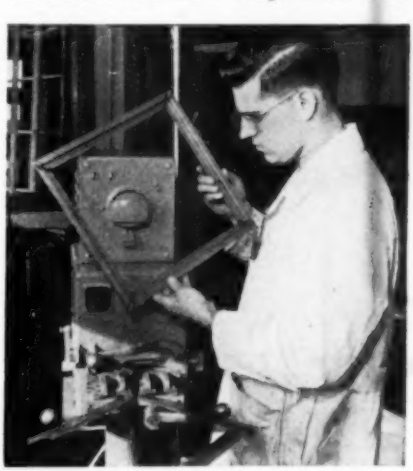
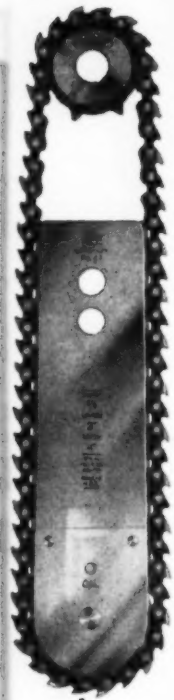


Fig. 5. Typical steel shape welding application.

FIELD
SINCE 1880

CHAIN MORTISE CUTTING EQUIPMENT



SUPERIOR chain mortise cutting equipment made possible through Field research and experience . . . Many profit making improvements which you can test for yourself. Cut costs . . . raise quality . . . increase production with Field mortising equipment.

More than 90 standard sizes of cutting equipment to assure you an excellent product and interchangeable replacement parts.

Write for information on our chain grinders for sharpening your mortise chains.

Complete mortising equipment at . . .

WILLIAM H. FIELD CO.
327 Dorchester Ave.
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variance from one type of steel to the other need only be slight to alter the weldability. Here is how one can readily determine the efficiency of a weld on any type of band steel. (1) Set welder controls for width of band. (2) Make the weld and allow it to cool but do not anneal. (3) Break the weld.

Observations: A good band weld has a fine grain structure similar to that of a broken file, whereas a brittle weld has a coarse grain structure resembling thousands of minute crystals. If the weld is brittle, the welder controls should be changed as follows. (1) Gap control should be moved to next higher setting or to the highest and widest position, if necessary. (2) Spring tension should be reduced or left as is. The weld may now have more flash or upset but it will be noted that the weld has a fine grain structure and will prove to be a very good one when annealed correctly.

The following are two alternative procedures: (1) Do not change the jaw or spring tension settings; turn timing adjusting screw one quarter turn in and out and make a weld at each setting to determine the most effective; or (2) set jaw gap control at either No. 1 or No. 2 position; change the timing adjusting screw to obtain normal flash or upset.

The End

CHECKERBOARD PLYWOOD

A new checkerboard-patterned hardwood plywood panel is currently being offered by United States Plywood Corporation.

According to the announcement, the checkerboard effect on the plywood panels is achieved by using 16-inch squares of dark African ribbon stripe mahogany and lighter Korina. The grain of each square, it was stated, is set at right angles to the next, creating the unusual effect.

The company said the new checkerboard plywood is available in 48-by-96-inch panels of five-ply construction, and offers architects, builders and manufacturers a low cost solution to executing outstanding checkerboard effects in wall paneling, displays and furniture.

SAWDUST SALAD BOWLS

Sawdust, one of the world's oldest waste materials, has been blended with a brand new synthetic to produce attractive salad bowls and utensils. Molded by Ability Products of Pasadena, Calif., the bowls and utensils are made of granulated wood and Monsanto Chemical Company's Lauxite UF-71, a new, neat powder urea binder. The new resin permits manufacturers to design and mold products of wood waste that were formerly impractical or uneconomical with wood in its natural form. Conventional compression molding methods are used.

PATTERN PAPER

Sharp reduction in layout time and increased accuracy are claimed when Barrows square-up layout paper is used for making woodworking patterns.

Originally introduced for use by metal sign contractors, the product is now being offered for all types of pattern making. The heavy, Kraft-type paper is imprinted with dotted lines indicating one-inch and six-inch squares. In addition, small dots permit measurements to one-quarter inch increments. The paper is seen as a major aid in design and manufacture of any type where full-size paper patterns are desirable.

A sample measuring eight by ten inches is available on request to the Barrows Porcelain Enamel Co., Langdon Road and Penn. R.R., Cincinnati 13, Ohio.

One hand's free to hold the work when you drive screws with a "Yankee" 130A. The quick-return (Q-R) spring in the handle keeps the bit in the screw slot, brings the handle back after each push. Speeds driving in narrow, inaccessible places. One hand operation plus fast-action spiral puts push into assembly work. Like all "Yankee" Tools, the 130A is made for years of hard work.

"YANKEE" CENTERING SLEEVE BIT SAVES TIME AND SLIPPAGE

No time lost fitting bit into screw slot. This spring-mounted bit automatically finds the slot and stays there. No slipping, burring or gouging. Two sizes, 7/32" and 9/32" at tip. Your industrial distributor sells "Yankee" Tools and accessories.

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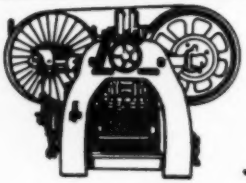
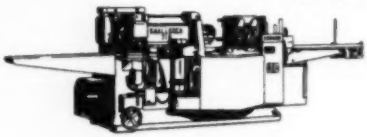
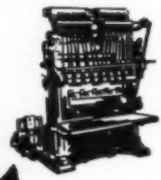


Prescott Resaw

CKL Door Sticker



Morgan Nailer



Lombard Chain Saw

Lubrication Problems?

not on these machines!

...they're all BIJUR equipped

Every one of these machines has a Bijur system built in to solve its own particular lubrication problem. The compact *chain saw* is oiled by a miniature lubricator. The *resaw* and *nailer* use a "one-shot" system. The *door sticker* has a fog system to keep its spindles running smoothly at 9000 rpm. All four prove that machines run smoother *longer* on Bijur-oiled bearings.

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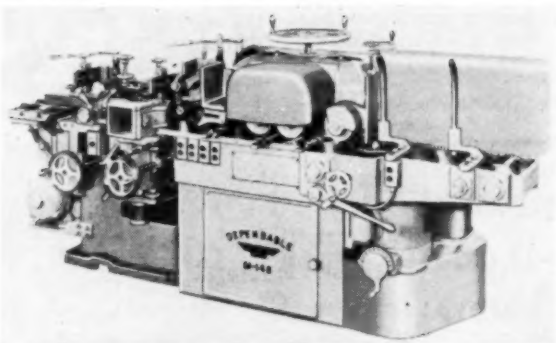
EQUIPMENT and Supplies for the WOODWORKING INDUSTRY

DEPENDABLE MOULDERS WITH HOPPER FEED



Dependable Machine Company of Greensboro, N. C., designers and manufacturers of woodworking machinery, announce the development of a random length hopper feed for use with the three models of electro-unit drive moulders manufactured by the company.

The Dependable hopper is designed to take short, long, thick, thin, narrow, and wide stock with equal ease of feed. This unit has been made very compact in order to take very short stock, feed easily, take less floor space, and be in conformity with the compact design of the moulders. The hopper has a capacity of stock up to 48" long and up to the standard width of the moulder. Longer stock can be fed by hand in the conventional way.

The hopper is driven off of the main drive unit of the moulder, and is synchronized with the feed of the moulder so that when the feed is changed on the moulder the hopper automatically changes. The variable speed drive gives any rate of feed between 20 and 150 feet per minute. The feed of the hopper is controlled by means of a tensioning hand lever conveniently located on the operator's side. This hand lever controls the belt through which the power is transmitted.

The Dependable hopper was designed so that it would feed random length stock of various dimensions. The hopper

has four feeding mechanisms for short stock, and five feeding mechanisms for long stock, which act on the stock to feed it to the infeed rolls on the moulder which drive the stock on through the machine.

In order to properly feed wide stock, two power driven feed rollers are provided. These are made of wider than usual width to make feeding easier, and are located just ahead of the kicker and chain feed. One is a bottom roll. The other is a spring loaded top roll which is adjustable for thickness of stock. This adjusts up to 4½" which is the maximum thickness capacity of the moulders. These two feed rolls are made reversible so they can be changed to obtain even wear, as the inside of the rollers usually wear the fastest. This bottom feed roll is usually an idler roll. By having this power driven it makes the feed of the hopper much smoother and especially does a superior job on feeding wide stock.

A chain is provided to give side thrust on the stock. This chain works between a power driven back roll feed roll and the lower power driven front feed roll. This chain is made of hardened steel for long wear and is properly supported to give smooth, continuous operation.

A power driven back feed roll is provided at the infeed end of the hopper. This roller will help to feed long stock in the hopper or stock too long for the hopper which is fed by hand. This feed roll is not normally provided for a hopper.

In addition to the three power driven feed rolls and the chain feed, a kicker is provided which puts a quick thrust on the stock to move it until the end butts the end of the preceding piece. The kicker unit is adjustable, by means of a hand wheel, to take stock of any width up to the maximum capacity of the moulder. The kickers are made in sections so that a single kicker can be used for thin stock. Additional kickers are added as needed for thicker stock. In factory tests stock as thin as 1/8"

Yates-American

Chooses **CARTER JIFFY TIRES**

. . . because they end all bandsaw tire problems

Solves all bandsaw tire problems! That's why you'll find Carter Jiffy Tires on the new "J" Line 20" bandsaw manufactured by Yates-American Machine Co., Beloit, Wis. What's more, these revolutionary tires outwear other tires 2 to 4 times. And when replacement is needed, anyone can replace them in 10 minutes—and have a perfect wheel.

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CARTER PRODUCTS CO., INC.

423 Wm. Alden Smith Building
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Grand Rapids 2, Michigan

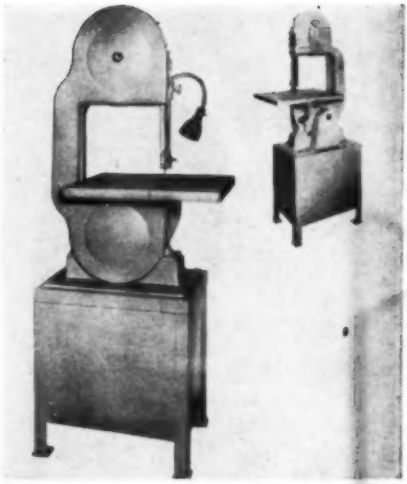
was successfully run at feed rates near the top speed of the moulder. The kicker is spring loaded so that stock varying in width up to 3/8" can be run without changing the setting of the kicker.

H & A BAND SAW

Heston & Anderson, Fairfield, Iowa, manufacturers of woodworking machinery, have announced the addition of a new band saw to the firm's line of machines.

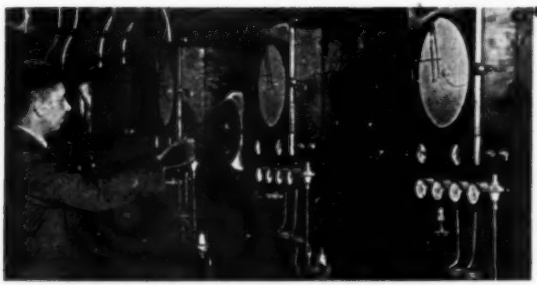
The new saw, known as the 14K band saw is a 14" band saw equipped with a large 20" x 23" tilting table made of heavily ribbed cast iron. It has a capacity of 12 1/2" vertically (table top to wheel guard) and 13 3/4" horizontally (blade to main guard).

The product's frame and base are made of heavy grey iron and steel for maximum stability. The motor base is easily adjustable and requires no belt tightening device. Upper and lower wheel guard is one piece and opens



instantly, on a hinge, for changing blades.

The upper wheel spring suspension



Master Mind of The Moore Cross-Circulation Drying System

Let the Moore Master Recorder-Controller take the "guess" out of seasoning: This single instrument contains four separate dryer controls: ★ Automatically controls roof ventilators, conserving steam and fuel — ★ Automatically controls and records temperatures at each end of kiln independently — ★ Automatically controls and records humidity inside kiln.

Get The Facts, and You'll Get a Moore Cross-Circulation Kiln

MOORE DRY KILN COMPANY

Oldest and Largest Manufacturers of Dry Kilns and Veneer Dryers

JACKSONVILLE FLORIDA · BRAMPTON, ONT. CANADA · VANCOUVER, B. C. CANADA · NORTH PORTLAND OREGON

- **Revolutionary design** — two screw points in one — single thread point feeds bit quickly — interrupted thread releases it instantly — bit is always under control.
- **Balanced cutting action** — Single shortened spur — requires less power and end pressure.
- **Drills smoother** — *cuts cleaner holes faster*—bit alternately seizes and releases bite on wood — clears chips before they can bind or jam.
- For use in any three-jawed chuck or drill press. Available in sizes up to $\frac{16}{16}$" for lightweight, medium or heavy drills.

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NOW PART OF
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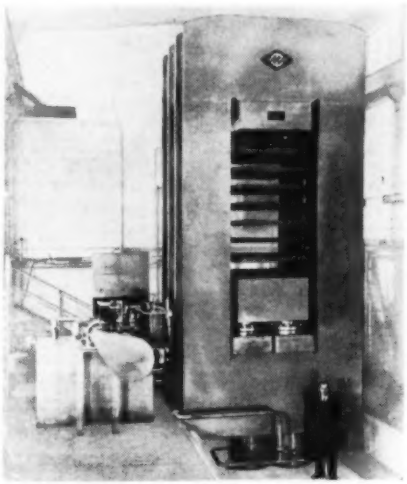
THE TOOL BOX OF THE WORLD

device and blade tension hand wheel are the simplest possible, yet more effective. The free-turning hand wheel raises or lowers the large, dynamically-balanced upper wheel for blade tension.

GIGANTIC PRESS

One of the world's largest panel presses was premiered in Perstorp, Sweden, recently. Designed and built by the Fjellman Engineering Works in Mariestad, Sweden, of which Fjellman & Winther Company in Joliet, Illinois, is the United States sales distributor, the huge new press has a tremendous capacity.

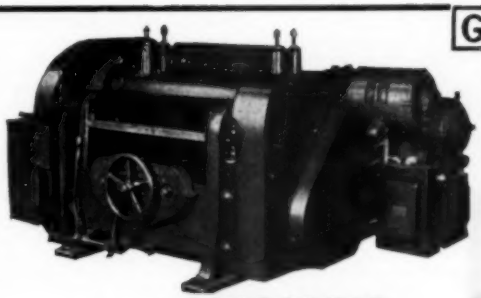
Every two hour cycle of this 96 ton giant produces 100 sheets of a 406 square yard area. As a literal example of the vast pressure which can be applied by the press, its lift is equal to the weight of the entire population of a city of 70,000 or approximately 6,500,000 pounds.



The press is the largest of its kind in Europe, and the Skanska Attikafbriken for which it was manufactured, will use it to produce the famous Perstorp plastic sheets.

100 YEARS of Progress

in the development and manufacture of Woodworking Machinery assures you top quality when you purchase Goodspeed Planers.



These Planers are made for accurate and finely finished work; plane any kind of wood on both sides in same operation. Simple in design, powerfully built for years of service with operating expense minimized by use of Anti-friction and Removable Bronze Bearings on Feed Rolls. Come in 24" — 30" — 36" widths.

GOODSPEED Double Surface Planers

Capacity: Boards of full width and from 1/8" to 7" thick.
Feeds from 20 to 100 feet per minute, two feeds for each machine, according to rates of feed ordered.
8 roll type, 6" diameter feed rolls.
2 sectional infeed rolls
Sectional chip breaker
Furnished with 4 knife and 6 knife round heads mounted on ball bearings.

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WINCHENDON, MASSACHUSETTS

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HIGH QUALITY - LOW IN PRICE

SIMONDS *New* SI-CLONE SAWS

SCIENTIFICALLY HEAT TREATED • ACCURATELY GROUND
CUTS STRAIGHT • FAST • SMOOTH — STAYS SHARP

This complete new line of circular saws **UP TO 12"** in diameter, will give long, satisfactory service, excellent performance and the most value for the least cost. For use on all makes of table, bench, swing, radial arm and portable electric hand saw machines.

TYPE OF SAW	SIZE	PRICE
Cut-off	6"	$1.75
Rip	7"	2.00
Combination	8"	2.15
62, 54, 60	10"	3.15
Easy Cut	12"	4.35

TYPE OF SAW	SIZE	PRICE
Hollow	6"	$2.75
Ground	8"	3.95
Planer	10"	7.45
	12"	9.95

ALL SAWS SHIPPED POSTPAID EXCEPT C.O.D. ORDERS. SPECIFY BORE WHEN ORDERING. OR IF PORTABLE ELECTRIC SPECIFY MAKE AND MODEL. SEND FOR LITERATURE.

Each saw is individually packaged, in factory-perfect condition, ready for use.

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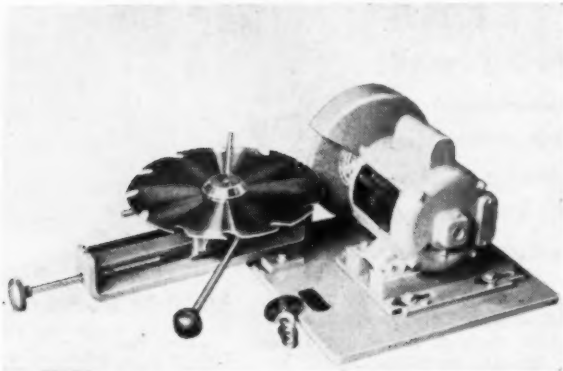
CIRCULAR SAW SHARPENER



This new cam-actuated circular saw sharpener is being introduced by the Hanchett Manufacturing Company of Big Rapids, Michigan and Portland, Oregon.

Designed by Hanchett for wide tooth spaced saws (safety type), the "Easy Cut" circular saw sharpener accurately generates the correct tooth shape with uniform, sharp, clean saw teeth. Precision built by one of the world's largest manufacturers of saw and knife fitting machinery, this balanced unit has many outstanding features such as cam action, generation of the proper saw tooth lengths and shape, uniformity and accuracy; capacity for saws from 6" to 24" in diameter and special 1/2 H.P. capacitor motor. The feed finger is spring actuated and adjustment for saw hook is provided from 0° to 30°. Saw bushings in sizes from 1/4" to 2" diameter are included together with the Hanchett Red Anchor grinding wheel and wheel guard.

This new machine also performs efficiently as a hand gummer. Simple in design and operation, compact and sturdy for constant use, the "Easy Cut" circular saw sharpener is moderately priced for wide-spread distribution. An announcement Bulletin No. EC-9 is available upon request.

MILLWORK PRESERVING PLANT

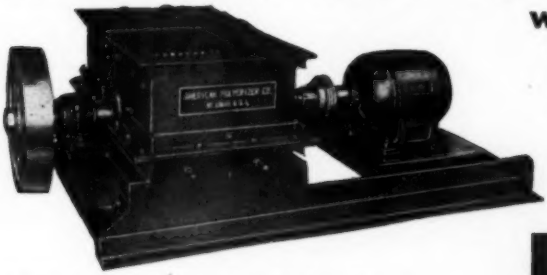
Installation of a Dri-Vac wood preserving plant in the frame factory of Deer Park Pine Industry, Inc., Deer Park, Washington, is announced by that company and the Protection Products Mfg. Company, Kalamazoo, Michigan.

This unit utilizes the Dri-Vac Protection process and Woodlife water repellent preservative to treat wood window frames, siding, knotty pine paneling and other wood products on a rapid production basis.

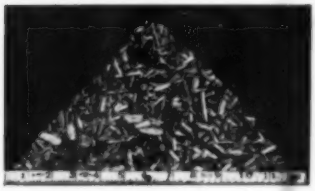
Entire truck or pallet loads are placed on an elevator in the 17 foot long vacuum chamber where the air is partially evacuated from the wood cells. In the next state of the automatic cycle, the loads are lowered into the preservative bath where uniform penetration and distribution of the Woodlife are controlled by vacuum. In the final stage, the excess solution is removed from the wood by increased vacuum and the surface is dried by the rush of air reentering the vacuum chamber.

Millwork items so treated are protected against fungus decay and stain, termites and other wood destroying insects. The water repellency of the preservative guards the wood against ex-

SHRED YOUR WOOD WASTE FOR FUEL with AMERICAN WOOD HOGS



Make your wood waste pay as a cheap source of fuel — by reducing it to uniform shreddings in a quick, efficient one-step operation.



American's Wood Hog features lead in performance and low operating cost:

- Rugged Shredding Elements
- Adjustable Platen for Size Control
- Built-In Trap for Tramp Metal
- Capacities up to 7 TPH

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American PULVERIZER COMPANY

Originators and Manufacturers of Ring Crushers and Pulverizers

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USE A SAND-RITE "DUO" SANDER

Get A-1 finishes at a minimum cost on all types of wood products of rounded contour and irregular shape.

Save time and materials when you sand such items as . . .

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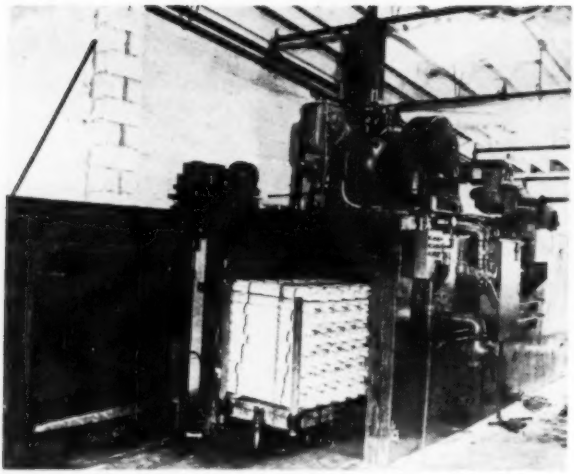


cessive swelling, shrinking, grain raising and the other effects of water and moisture. The preservative standards of the National Woodwork Manufacturers Association are thus fully met, as are the demands of the public for trouble-free service from wood products.

The chief advantage of this process over the cold-dip method of treating is more rapid drying of the wood surface so that glazing or painting can be done more quickly. The entire unit is

FLOCKED CUTLERY SECTION INSERTS

FOR

FURNITURE AND KITCHEN CABINET MANUFACTURERS

FINISHED IN DARK GREEN FELT FLOCK

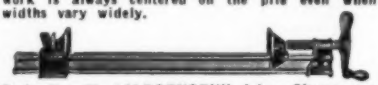
SIX STOCK SIZES
SPECIAL SIZES ON REQUEST

FOR FULL INFORMATION AND PRICES WRITE TO

H. H. PRODUCTS & FINISHING CORP.
131-37 41st Ave. Flushing, N. Y.

"Jorgensen" PIECE MARK REG U S PAT OFF **PILING CLAMPS**

Style No. 2100 "JORGENSEN", for the most economical and convenient method to increase your edge-gluing capacity. More glued stock per pile—work clamped on both sides prevents buckling—all clamping done on same side of pile—any thickness of stock, any length, width, or height of pile without special fixtures or trucks. The work is always centered on the pile even when widths vary widely.



Style No. 70 "JORGENSEN" I-bar Clamps are a long-time favorite; the Multiple Disc Clutch zips to position, holds securely, releases easily without notches or other deformity in the bar. Carefully designed and manufactured for longest service—at no extra cost to you.

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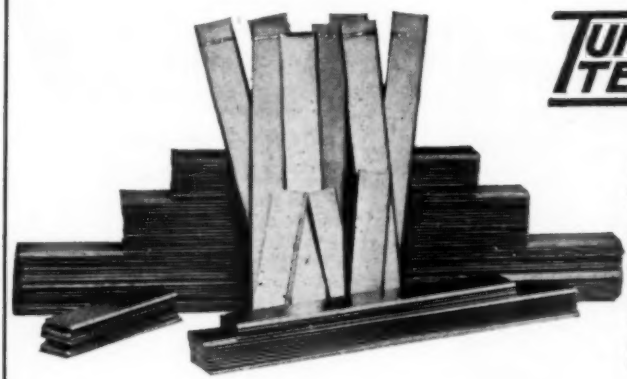
ADJUSTABLE CLAMP CO.
"The Clamp Folks"
418 N. Ashland Ave. Chicago 22, Ill.

very compact and virtually eliminates the need for the storage and drying of treated products. The Dri-Vac process was developed by Protection Products Manufacturing Company in 1945 and has been applied to the clean, paintable preservation of lumber in several commercial plants. Adaptation of the process to rapid treatment of millwork and other fabricated wood products is a recent development, and the Deer Park Pine Industry unit is the first of several to be installed in large production plants in the near future.

AUTO-NAILER ON NEW JOB

A few months ago, a large mid-western manufacturer of heavy machinery and equipment needed a faster method for making large reels for their wire rope. Problems were many and real. Production costs were astronomical.

This large concern, with outstandingly capable engineering and production talents, had received literature on the Auto-Nailer and requested an Auto-Nailer sales engineer. After a short conference, it was decided that



TUNGSTEN TEMPER

HIGH SPEED THIN KNIVES

Stalter High Quality of workmanship and material is always reflected in increased production with less "down-time."

PROMPT DELIVERY

High speed thin knives are just one of the many Stalter products for the woodworking plant. For complete details,

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STALTER EDGE TOOL COMPANY
GRAND RAPIDS MICHIGAN

the Auto-Nailer could do this job—with proper jigging.

A Spartan model Auto-Nailer was installed in this large plant and their engineering personnel got busily engaged in planning for the production of wire rope reel sides.

Requirements were: reel sides should be perfectly round, 30" in diameter; two rows of nails were required, the rows about 6" apart; stock to be used was ¾"; two thicknesses used with respective grains running 90° to each other; nails should be bradded on bottom side.

The customer's engineers worked out the following production technique: Auto-Nailer's table pressure was eliminated (simple adjustment on the machine); a steel jig was built that would revolve on a turntable.

The stock was cut to lengths that would fit into the revolving jig. After the first stock was placed in the jig, another layer of stock was placed crosswise onto the jig. The operator depressed the Auto-Nailer treadle and, with the treadle depressed, revolved the jig and "sewed" a complete circle of nails.

The jig was designed, mounted on a track to allow it to be pushed forward several inches. (This, of course, provided for the second circle of nails.)

Step 4 was repeated. The stock was then removed from the jig. The stock was then trimmed by a band saw and the wire rope reel sides were complete.

As the jig is made of steel, a bradding action takes place when the point of the nail strikes the jig.

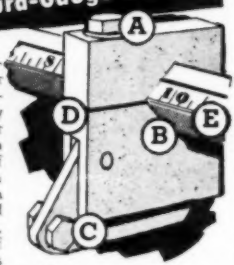
Fifteen gage, 1½" nails are used on this job. Three-nails-a-second Auto-Nailer speed allows this entire side to be nailed in approximately 27 seconds.

VENEER EDGE-BANDING PRESS

Supplementing the several Raybond gluing devices, widely used in the woodworking industry, the recently released Raybond veneer edge-banding

Newest Development in Lumber Gauges

The NEW IRVINGTON No. 15 Accura-Gauge Stop



Locking nut (A) firmly anchors gauge to bar through machined opening (B) and completely eliminates gouging or working of bar. With proper adjustment of screw (C), gauging can be accomplished down to ⅛-in. Machined steel surfaces, inside and out, insure accuracy. Face of the gauge (D) acts as straight edge or fence for precision alignment. Graduated bar (E) can also be furnished. Quantity discounts.

For complete details write for free pamphlet

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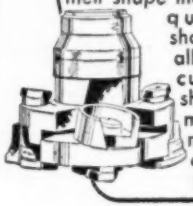
You can produce and reproduce sash moulding patterns without a variation . . . clearance protected Shimer circular bits hold their shape indefinitely! They're quick, easy to sharpen, designed for all-around clearance cut! Long runs or short—cut your sash mouldings the economical Shimer way and pocket extra profits!



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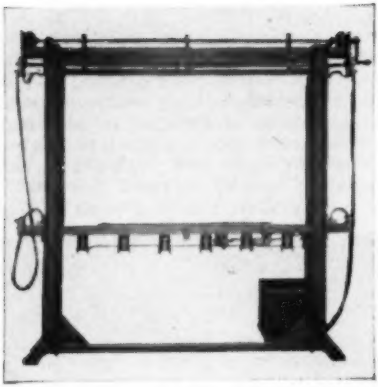
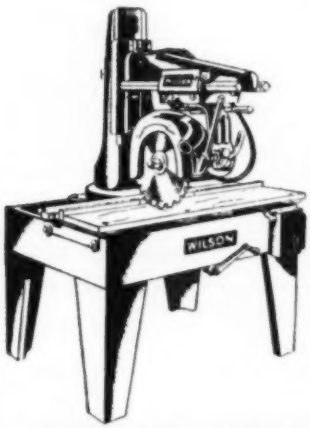


press produced by Electronic Heating Corporation of Newton Highlands, Mass., finds use among furniture manufacturers. This is a vertical press, requiring little floor-room, and is operated by one worker, as it is open on two sides for easy manipulation of the panels. Uniform pressure is maintained by the series of air cylinders at the lower edge. Multiple panels may be veneer edge-banded in one operation in this press as easily as one panel at a time. Templates for curved or serpentine edges may be inserted when needed.

Resin glues are used. The working area of the press operates from 110 or 220 volt single phase circuit. The controls operating the air cylinders are self-contained in the base of the press, and the entire unit may be handled and operated easily and efficiently by one workman, as the press is completely adjustable within the frame. Its maximum capacity is a panel or group of panels measuring 72 inches square.

Office furniture, modern chests and tables and all other wooden furniture on which the top surface edges are veneer-banded can be handled in this new press.

There is one thing about baldness. It's neat.



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PLYWOOD IN SMALL SIZES

West Coast plywood manufacturers began volume production of Douglas fir plywood in small sizes, called "Handy Panels," this winter. This is a move that has important ramifications for industrial buyers and users.

Aimed at meeting more closely the specific needs of many manufacturing operations such as sign shops and industrial woodworking firms, it means that plywood produced under the industry's rigid standards of quality will now be available in sizes more closely fitting their special requirements.

And it means more economical operation, trouble-free production lines and important reduction in waste in set-ups requiring panels in dimensions less than the industry's standard 4' x 8' panels.

The new stock small sizes are being manufactured in both the outdoor type plywood with waterproof glue and the interior type in accordance with the same U. S. commercial grading standards which assure high performance in standard sizes of Douglas fir plywood.

Within each type, the small panels are offered in both the "one-side" and "two-side" grades in stock sizes 24" x 48" and smaller, including such sizes as

24" x 44", 20" x 48" and 20" x 44". Although developed as a stock item, some individual manufacturers may offer other standard small sizes.

The specific grades offered in the new sizes are: EXT-DFPA A-A and EXT-DFPA Plyshield A-C (waterproof glue, two-side and one-side) and Interior A-A and Plypanel A-D (for interior use). All grades and sizes come in a wide range of thicknesses.

STOP DUST

DUSTKOPS — **20 Models**

UNIT TYPE — 300 to 3600 cfm
LOW COST — ¼ hp to 5 hp

AVAILABLE FROM STOCK

For: Grinders, buffers, polishers, woodworking, lint . . . All Dusts.

Send for Cat. 605a; describe problem.

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IMPROVED Ball Bearing Shaper Collars

Friction between collar and pattern entirely eliminated — no more burning.

Outer rim is independent of the slotted collar and revolves with the feed of the work.

Collars can also be supplied without grooves for use with solid steel cutters.

Give diameter of collar and size of hole.

GUSTAFSON & SCOTT MFG. CO.
1637 Lowell Avenue — Chicago 39, Illinois

The new small sizes are labeled at the mill with bright, easily read pressure-sensitive labels clearly identifying each panel for type and grade. The labels can be removed easily without sandpapering or scraping, leaving the surface free and clear for finishing.

Handy panels are available now in stock sizes from regular sources of supply for plywood.

Industrial uses are myriad, ranging from baffle plates and chair seats to signs and toys.

HARDBOARD PANELS

Masonite Corporation recently announced three new products for application in furniture, store fixtures, kitchen cabinets, trailers, radio and television cabinets, displays, toys, novelties and other consumer goods. Manufactured by Marsh Wall Products, Inc., Dover, Ohio, subsidiary of Masonite, they are available on bases of 1/8" and 3/16" Tempered Duolux.

Industrial Marlite woodpanels have baked grain coatings on which is a factory-applied surface finish, almost glass-smooth, yet flexible. This finish surface is of the baked type giving the maximum in solvent, water and mar resistance.

Industrial Marlite Woodpanels, with baked grain coat, are Tempered Duolux to which has been applied specially compounded baking sealers and ground coats that give a base suitable for the factory application of the graining ink. All coats, including the ink, are baked to insure the best properties. The surface of the grained panel is especially prepared for application of finish coats of practically all types. Grains are available as follows: furniture red mahogany, furniture brown walnut, natural prima vera, gray prima vera, blond mahogany, silver walnut, light oak and limed oak.

Resawing . . . 1/10" Strips with the
McDONOUGH 44"
VERTICAL BAND RESAW
Anson-Gilkey Co. of Merrill, Wisconsin, needed a high-speed resaw that would cut 1/10" strips, with precision accuracy and minimum kerf wastage. They specified a McDonough 44" Vertical Band Resaw . . . and got exactly what they needed!
For more than sixty years, users the world over have found that for speed, accuracy and versatility, McDonough Band Resaws cannot be equalled. There are reasons:
• Independently adjusted feed rolls
• Exclusive gear type transmission
• Accurately balanced wheels
• Knife-edge sensitive type saw strain
• Electro-filmed feed roll gears and shaft
• And many more proven design features!
For gauge, center, bevel or rip sawing of stock up to 12" wide and to a maximum depth of 25" . . . for greater dependability and top performance—Specify a McDONOUGH 44" VERTICAL BAND RESAW!
Write for Complete Information, TODAY!
Resawing 1/10" strips on a 44" McDonough Vertical Band Resaw.
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WORLD'S LARGEST PRODUCER OF BAND RESAWS
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Each year forest fires, most of them man-caused, destroy enough wood to build 86 thousand homes. You can help halt that loss by always being careful with fire.

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Wheaton, Illinois

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Wood laminated arches save 90% of steel.

Wood barrels and casks save 95% of metal.

Wood boats save 80% of metal.

Wood cabinets for scientific equipment save 95% of metal.

Wood kitchen cabinets save 100% of metal, except hardware.

Wood industrial cabinets save 100% of steel.

Wood sewing machine cabinets save 80% of metal.

Wood coat hangers save 100% of steel.

Wood cooling towers save 50-95% of metal.

Wood crutches save 98% of metal.

Wood desks save 100% of metal, except hardware.

Wood farm machinery saves 60% of steel.

Wood fencing saves 95% of metal.

Wood filing cases save 100% of metal, except hardware.

Wood furniture saves 95-100% of metal.

Wood garage doors save 100% of aluminum.

Wood gutters save 100% of copper or galvanized iron.

Wood house trailers save 60% of metal.

Wood ironing boards save 90% of steel.

Wood joists and beams save 100% of steel.

Wood ladders save 100% of aluminum.

Wood louvers save 100% of metal.

Wood mouldings and trim save 100% of metal.

Wood plywood or fibreboard packing boxes save 100% of metal, except hardware.

Wood pencils save 100% of metal.

Wool piling saves 100% of steel.

Wood poles—solid, laminated or hollow—save 100% of metal.

Wood radios, phonographs, etc., save 90% of metal.

Wood railroad cars save 20-60% of steel.

Wood rakes save 100% of metal.

Wood rulers save 100% of metal.

Wood scaffolding saves 95% of metal.

Wood shelving saves 100% of metal.

Wood shingles save 90% of metal.

Wood siding saves 100% of aluminum and sheet steel.

Wood silos (forage) save 90% of metal.

Wood stave pipes save 75% of metal.

Wood tool handles save 100% of metal.

Wood toys save 90-100% of metal.

Wood cargo truck bodies save 70% of steel.

Wood trusses save 90% of metal otherwise required for trusses.

Wood Venetian blinds save 100% of metal, except operating hardware.

Wood wash boards save 70% of metal.

Wood wheels, pulleys, etc., save 70% of steel.

Wood window boxes save 98% of metal.

Wood windows save 100% of steel and aluminum.

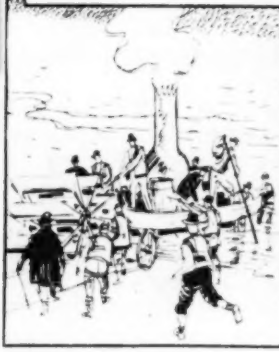
Wood is the world's most widely used industrial raw material; its third most important fuel; the source of nearly all of its paper and packaging materials. Wood is the raw material for a great range of chemically synthesized products, from radio recording tape to inner soles for shoes; from photographic papers to bituminized sewer pipes.

Mechanics Through The Ages

DURING EARLY FEUDAL DAYS IN FRANCE WHEN RURAL CRAFTSMEN WORKED AS SERFS ON THE GREAT ESTATES, A GOLDSMITH WAS CONSIDERED THREE TIMES AS VALUABLE AS A BLACKSMITH! IT COST A MURDERER 150 SOUS FINE TO SLAY A GOLDSMITH BUT ONLY 50 SOUS TO KILL A BLACKSMITH!

Rod Ruth

INSTEAD OF HIRING OUTSIDE HELP, THE IRON FOUNDER OF MEDIAEVAL TIMES OFTEN PUT HIS WIFE TO WORK BREAKING UP ORE AND DOING ODD JOBS.



AMERICA'S FIRST STEAM-OPERATED VEHICLE WAS AN AMPHIBIOUS STEAM SCOW, BUILT BY OLIVER EVANS IN 1805, WHICH, MOUNTED ON WHEELS, RAN UNDER ITS OWN POWER THROUGH THE STREETS OF PHILADELPHIA TO THE SCHUYKILL RIVER WHERE, FITTED WITH A STERN PADDLEWHEEL, IT STEAMED DOWN THE RIVER TO THE DELAWARE JUNCTION.

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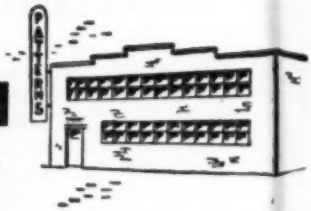
Moak Hand Planers and Jointers

FOR FAST-FEED, VIBRATIONLESS PRODUCTION IN DOZENS OF SHOP JOBS

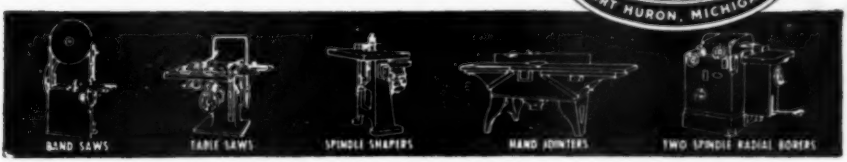


You get more for your money in Moak Hand Planers and Jointers, the indispensable shop tool for jointing, planing out of wind; for rabbeting and beveling.

Tungsten steel knives are fitted in the high carbon alloy steel cylinder head, the head mounted in self-aligning ball bearings enclosed in dust-proof housings. Available in sizes for planing 12″ and 16″ lumber; equipped with ½″ rabbeting groove, adjustable bevel gauge.

Get the facts **on Moak Hand Planers and Jointers right away. Write for our illustrated descriptive and specification folder.**

MOAK MACHINE & TOOL CO.
MOAK
PORT HURON, MICHIGAN



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If you will list below the wood-working machines, supplies or machine shop equipment in which you are interested and mail this page to us, we shall be glad to refer your needs to the manufacturers or others in position to serve you. Replies will come from them — not from us.

If you have any special shop problems let us have the details. Often we can make helpful suggestions.

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DISPLAY ADVERTISEMENTS: 1 inch (Minimum), $8.50; 2 inches $17.00; 3 inches (Maximum), $25.00.

Write directly to those offering the machine for sale, for prices and full descriptions. If what you seek is not advertised, write Hitchcock Publishing Company, 222 E. Willow Ave., Wheaton, Ill., making known your wants on either new or used machinery and the publisher will gladly assist you.

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Belt Sander, 6' Mattison No. 124 auto. stroke.
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Molder, Smith 6 inch 4 side heavy M.D., $650
Mortiser, Greenlee Horizontal, HC, $125
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Mortiser, Greenlee Hollow Chisel No. 228 automatic, $350
Motor, 7½ HP 3 ph BB, little used, $100
Planer, Fay 24 in. Pony with motor, $300
Planer, Indiana 18 in. Pony, $300
Planer, Oliver, 30x8 Cabinet rd. head, $500
Radial saw, Multiplex 1½ HP, 3 phase, $200
Ripsaw, American Gang self feed, $300
Sander, Smith 31" 3-drum Endless Bed MD, $1600
Sander, Wysong and Miles No. 171 belt, MD, $250
Saw, Hamilton 20 inch heavy duty, Variety, $175
Tenoner, Fay with two ropes, $250
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Air Compressors, various sizes
Air Compressor, Gardner Denver 10x10 Twin dmd.
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Band saws, New Moak 36" bb. dmd.
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Clippers, Sheridan 65" dmd.
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Frequency changers, 15 KW and 25 KW dmd.
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Jointer, Amer. 12" bb. dmd.
Jointers, New Moak 12", bb. dmd.
Lathe, Yates No. 71 bb. dmd.
Mortiser, Sidney, single spindle pb. bd.
Mortiser, Greenlee No. 228 Vert. bd. & motor
Mortiser, W&M No. 288—5 spdle. Horiz. dmd.
Mortiser: W&M No. 284 Sgl. Vert. bb. dmd.
Moulder, Amer. No. 35—10" bb. dmd.
Moulders, Yates-Amer. C-55—9" bb. dmd.
Moulders, Yates-Amer. C-89—6" bb. dmd.
Planer-Matcher, Yates A1-15"x6" rd. hds. pb. bd.
Planers, New Crescent 24" bb. dmd.
Planer, Whitney 30" Sgl. rd. hd. bb. v-drive
Planer, F & E No. 156 36x7 DMD rd. head
Redrier, Merritt 12 plate 36x72
Resaw, Connell & Dengler Circular pd. bd.
Router, Defiance, 2 spindle bb. dmd.
Routers, Carter, floor type, Hvy. duty, electric
Routers, Onsrud W240, bb. dmd.
Router, Yates-Amer. U9 bb. dmd., High Speed
Saddle Seat, McKnight 1B pb. bd.
Sander, Berlin, 31" 3 drum, roll feed bd.
Sander, Mattison No. 134, pb. bd.
Sanders, Mattison No. 138, hand block bb. dmd.
Sander, New Jefferson, hand block, bb, dmd.
Sanders, Niagara Brush, bb. dmd.
Sander, Smith 49" 3-drum endless bed, bd.
Sander, 48" double disc, dmd.
Sander, W&M No. 171 Hand Block, pb. bd. & Mtr.
Sander, Yates 213, 49" 2 drum endless bed, dmd.
Sanders, F & E 60" 3 drum roll feed, dmd.
Sanders, McKnight sgl. drum 24"x16" dmd.
Sander: Oakley Model G2, bb. dmd. hd. block
Sander: Oakley H2, edge belt. bb. dmd.
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Saws, Buss Tilt table Variety bb. dmd.
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Many other items, send your inquiries.

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New Delta 20A-30A-40A-50A Ball Bearing Radial Saws
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Mattison 202 Str. Line Rip Saw, BB, DMD
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Double Cut-Off and Equalizing Saw

Beach 103" Dbl. End Cut-Off Saw and Equalizer, Ball Brg. M.D., used only 6 weeks. Ext. Saw & Dados. Bargain.

ERVIN MACHINERY CO., INC.
124 BLVD. OF ALLIES PITTSBURGH, PA.

FOR SALE

No. 274 MATTISON
4" MOULDER
with
Ball-bearing Direct
Motor-Drive

Monical Machinery Co.

Grand Rapids, Michigan

Only GENUINE parts
WILL KEEP YOUR
Jenkins
MACHINES
IN TOP CONDITION!

GENUINE JENKINS PARTS ARE MANUFACTURED AND STOCKED EXCLUSIVELY BY

JENKINS MACHINERY CO.
DIV. Curt G. Joa INC.
SHEBOYGAN FALLS, WIS.

FOR SALE

The Stanley Corp. **Stanley, Wis.**

Used equipment priced to make more floor space available.

1 Dowel Rod Machine—Hawker
1 Glue Clamp Wheel
1 High Chair Boring Machine
1 Dovetailer
2 Spray Booths
2 Dennis Tape Veneer Splicers
1 Veneer Jointer
2 Belt Sanders
1 Bending Machine & Retort
2 Case Clamps
Spray guns, knives, motors and other miscellaneous equipment.

Motor Driven
FREQUENCY CHANGERS
IN
STOCK

Sizes: 10 to 60 KW
Outputs: 90-100-120 and 180 cycle
Reliably Rebuilt
1 YEAR GUARANTEE
Attractively Priced
SAVE MONEY when you BUY any ELECTRICAL EQUIPMENT
We actually have one of AMERICA'S LARGEST STOCKS
Send us your Inquiries.

L. J. LAND, INC.
Est. 1910 (42*nd Year*)
Corner Lafayette & Grand Sts.
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CAnal 6-6976

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Jenkins No. 95 Double End Tenoner—48"x96". Motor driven. With special casket compound attachments and Diehl Lock Corner Cutter-heads. Attractive price. Fine condition.

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Onsrud Router, model W450, new in 1944; used about 3 months $3,000.00

ACME MACHINERY & MFG. CO.
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7-1529

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PLYWOOD—LUMBER
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FORMERLY USED IN THE MANUFACTURE OF TELEVISION CABINETS

SEND FOR COMPLETE LIST IF INTERESTED

United Wood Specialty Mfg. Co.
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FALL RIVER, MASS.

SURPLUS ITEMS

Hyster Straddle Truck, 54"x54"
Leitelt Motor Driven Lumber Hoist
Onsrud WB-85 Double Head Auto. Shaper
43" Yates T 5 Automatic Turning Lathe, 100" of heads
Inverted Swing Saw with Motor
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6 Cope Heads for 1⅛ or 1⅜ Sash Sticking
4—2" Heads for Milled-to-Pattern Knives
28 Shimer Heads for 1⅛, 1⅜, 1¾ Sash Sticking
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Francis 75 Gallon Glue Mixer and Cooker
Francis 15 Gallon Glue Mixer and Cooker
Hoefer Floor Type Drill Press
3 Band Strapping Machines
74 Circular Saw Blades
H. B. Smith Single Spindle Shaper BD from 3 HP Motor

TELEPHONE, WIRE, OR WRITE

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DUBUQUE, IOWA

1—28" Planer
2—Delta Unisaws
1—Delta Shaper 3 H.P.
1—6" Jointer
1—40" Blower
1—24" Blower
1—10 H.P. Bellsaw
2—Pringle & Brody 14" Ring Machines
1—Porter Hydraulic Cutoff Saw complete with the following:
1—36"x36' Walker Belt Conveyor
1—Walker Tailboy Conveyor
1—12"x18' Belt Conveyor
1—16"x16' Gravity Conveyor
1—18,000 lbs. Rotary Memphis Lumber Lift.

Also other miscellaneous woodworking equipment.

SIDNEY COHEN'S SONS, INC.
ROUTE 20 • MENTOR, OHIO
Willoughby 2-1500 - REdwood 1-4000

15" Yates Amer. A-21 Planer & Matcher
6" Vonnegut Electric Moulder
15" Yates C-1 6 Head Moulder
36" Buss Single Surfacer. Ball Bearing
48" Chase D E Box Tenoner
15" Yates A-4 Planer & Matcher
54" Connell & Dingler Band Resaw
72" Gaynes 6 Spindle Borer. Electric
15" Am. No. 77-A Planer & Matcher
Mattison No. 207 S. L. Ripsaw, Electric

R. K. HASKEW & CO., INC.
CHATTANOOGA 5, TENNESSEE

Dowel Moulder, 6" Vonnegut, elec.
Saw Sharpener, Wardwell, auto., circ. motor driven, latest type
Ripsaw, Newman 37-A, self-feed, b.b., 15 HP d.m.d. almost new
Auto. Cut off Saw, Irvington, 5 H.P.
Dovetailer, 15 spindle, Dodds, m.d.

VICTOR PETERZELL & CO.
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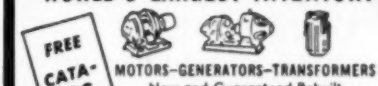
WORLD'S LARGEST INVENTORY



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New and Guaranteed Rebuilt
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KILN DRIED PARANA (Brazilian) PINE
GOOD WIDTHS AND LENGTHS
SPECIAL CAR LOT PRICES

Also

2 CARS of 8/4 KILN DRIED NORTHERN HD. MAPLE No. 1 C & BTR

Japanese White Oak Kiln Dried
4/4 - 5/4 - 6/4 Plain & Rift

APPALACHIAN LUMBER CO.
Expert Kiln dryers of Brazilian Parana Pine
Modern MOORE cross circulation kilns
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FOR SALE
SMALL WOOD WORKING PLANT
now manufacturing cabinets
in Northeastern Michigan.
C. LaCross,
STAR ROUTE, ALPENA, MICH.

GENERAL FOREMAN

Wood working shop located Southern Virginia requires general foreman. Supervise 40 to 50 men in operations involving production of walk-in coolers, boxes and containers for defense contracts and similar wood items. Must be familiar with wood working machinery and methods and be capable of setting job standards and preparing cost estimates. Send resumes of experience including recent salaries to —

Box No. 711
c/o Wood Working Digest
WHEATON, ILL.

ASSISTANT FOREMEN

Wood working plant Southern Virginia requires several assistant foremen both day and night shifts capable of supervision of rough and finished mill departments and assembly department. Desire locate young men with a minimum of five years experience in wood manufacturing able to supervise, train, and improve working methods of groups of 15 to 20 men. Proven performance will lead to greater opportunity and increased pay. Send resume of past experience including recent salaries to

Box No. 713
c/o Wood Working Digest
WHEATON, ILL.

Econaway Abrasive Belt Splicer

Precision built. Will splice any kind of abrasive belts and sleeves straight and true in two minutes.

Also Steam Humidifiers.

Write for particulars.

Dealers Wanted.

Econaway Manufacturing Co.
Bellevue, Michigan

WOODWORKING PLANT WANTED

Appalachian Hardwood Lumber Producer wants manufacturer to locate in his area. Good timber reserve and good quality lumber available. Several excellent locations for lumber using industries. Write:

APPALACHIAN FORESTRY ASSOCIATES
Riverton, West Virginia

MACHINE OPERATORS

Southern Virginia plant having stable year-round employment producing wood items for civilian and Government accounts offers employment to capable operators of molders, planers, saws, jointers. If available please reply immediately advising past experience and recent earnings. Reply to

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c/o Wood Working Digest
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MACHINERY WANTED

SINGLE MACHINES OR COMPLETE PLANTS—No machine too small or plant too large to interest us. Will pay spot cash. Advise what you have for sale.

J. LEE HACKETT CO.
1961 EAST MILWAUKEE AVENUE
DETROIT, MICHIGAN
Appraisers • Liquidators • Rebuilders

WANTED

Sales representative calling on Building Contractors—Lumber Yards—Cabinet Shops—Woodworking and Industrial Plants to sell the well known line of Master Woodworking machines. No objection to non-competitive lines. When writing state lines now handling and territory you cover.

The Master Woodworking Mfg. Co., Inc.
Brush & Fort St. Detroit 26, Michigan

RARE OPPORTUNITY For MILL SUPERINTENDENT

Take charge of complete milling operation for large unpainted furniture factory located in Central New Jersey. Now setting up all new latest-type automatic machinery such as double end tenoner, automatic gluing equipment, etc., in new modern plant. Thorough knowledge of machinery and machining operations required for production of dimension stock. Excellent possibilities for growth with a well-established, progressive, expanding organization. Write full details in confidence, including background, salary, time of availability, etc.

Address Box No. 709
c/o WOOD WORKING DIGEST
Wheaton, Ill.

Representative Wanted

An Old established Manufacturer of High Grade Woodworking Machinery needs Salesmen in Western Pennsylvania, Western New York, Kentucky, Wisconsin, Michigan, Louisiana, Mississippi, Florida, New England and many other sections of the Country. This may be interesting to Live dealers. Write us giving territory covered and tell us why you think we would both profit by association. *Address EGAN care of this Paper.*

WOOD WORKING DIGEST
WHEATON, ILLINOIS

HOWE HAND TRUCKS

A twelve-page condensed truck catalog has just been released by the Howe Scale Company, Rutland, Vt. Specifications and illustrations are shown for the complete line of the latest Howe two and four-wheel hand trucks, trailer trucks, platform skids, dollies, lift jack systems, wheels, casters and molded-on rubber tired wheels.

This catalog also shows modern construction features engineered for long, trouble-free and economical materials handling service. Howe trucks have been famous for ruggedness and dependability for nearly a century, we are told.

Carpenter: "You really hammer nails like lightning."

Apprentice: "You mean I'm fast?"

Carpenter: "I mean you rarely strike twice in the same place."

✓ CHECK ✓
MONICAL'S REBUILT LISTINGS
FIRST
FOR THE LATEST (AND BEST) IN WOODWORKING MACHINERY

★

PARTIAL LIST

BORERS
Fay & Egan multiple vert., 12-spindles
Valley City 2-spindle horizontal
Andrew 8-ft. horizontal
Root BM vertical

CLAMPS
Taylor 30-section, 8-ft. caterpillar type
Billstrom 39-sec., 8-ft. caterpillar type
No. 96 Handy case clamp
Handy revolving carrier
Palmer 6-in. wheel type clamp carrier
New Handy Nos. 54 & 55 chair clamps
Union revolving case clamps

JOINTERS
Porter 30-in. with 4-post feeder
Dennis veneer jointer
Hand jointers, 12 to 24-in.
Chain-feed, Meyers, Fay & Egan, Diehl, and Jenkins
Jenkins saw type veneer, ball-bearing, 6 and 8-ft.

LATHES
No. 55-C Mattison ball-bearing, motor-drive automatic turning
No. 57-D Mattison 40-in. lathe

MOULDERS
XL 4x2-in., ball-bearing
No. 276 Mattison ball-brg., direct m.d.
No. 274, 4-in. Mattison ball-brg., m.d.
American 4-in. babbitt-brg., belt-driven
Fay & Egan 7-in. plain bearing, 4-head
Woods 8-in. plain bearing, belt-drive
Yates C-4 plain bearing

PLANERS
Newman No. 500, 6-roll
No. 75 American, double
No. 177 Yates 30-in. roughing, double
Buss, 30, 36 & 44-in. sgle.; 30-in. dble.
Whitney 30-in. single
Whitney 36-in. double
Oliver 30-in. ball-bearing, single
No. 208 Buss 20-in. single

ROUTERS
Porter No. 500

SANDERS
No. 10 Nash, 6-spdl.; No. 25, 10-spdl.
No. 171 Wysong & Miles moulding
Yates 3-drum endless-bed 43 and 30-in., coupled motor
Smith ball-brg., motor-driven, 3-drum
Mattison No. 143, 3-drum

SAWS
Diehl No. 75 chain-feed
Yates G-2 chain-feed
Irvington cut-off
No. 202 Mattison chain-feed rip
No. 207 Mattison chain-feed rip
Bell Nos. 12C and 12A
6 and 7-ft. Buss and Hall & Brown hand-feed double cut-off
Wilkin-Challoner double cut-off
Whitney direct motor, tilting-arbor
Moak 36-in. band saw
Greenlee gang rip saw

SHAPERS
Porter double-spindle
No. 200 Porter single-spindle
Buss and Whitney double-spindle
Oliver single-spindle

TENONERS
No. 96 Jenkins ball-bearing, belt-drive
Fay & Egan single end
Eaglesfield saw type ball-bearing

MISCELLANEOUS
No. 928 Covel-Hanchett automatic circular saw sharpener
No. 300 Francis flat plate edge gluer (new)
6, 8 and 12-plate Merritt redriers
Nos. 7 and 8 Bell dowel drivers and gluers, motor-drive
Francis 30x72-in. hyd. veneer press
Salstrom 24-spindle carver
Wysong & Miles electric multiple horizontal mortiser
Onsrud S-175 automatic shaping attachment for Onsrud W-240 router
Sheridan 36-in. clipper
Loeffler toilet seat sander
McKnight chair bending machines

SPECIALS FOR THIS MONTH
Porter 30-in. Jointer with 4-Post Feeder
Mattison No. 276 Moulder, 6-in., Ball-Bearing, Direct Motor Driven.

MONICAL MACHINERY COMPANY
240 WEST LEONARD STREET **GRAND RAPIDS 4, MICHIGAN**

BORING MACHINES

Andrews 6 spindles 8' Horiz. foot feed
Bell BBMD No. 24 Double end, boring & chucking and sawing 54" capacity Model 24A
Jones Superior radial 1" to 16"
Prybill—radial 1" to 12"
Single spindle horizontal

DOVETAILERS

Dodds 10, 15, 20 spindle

DOWEL MACHINES

Hawker No. 2 All Ball bearing & roller bearing VBD
Hawker No. 2 Ball Bearing Head VBD

JOINTERS

American 12" Wedge Bed BB
Amercian 16" Wedge Bed BB
12" Colloday L. Powers, H. B. Smith, Crescent Sidney
Northfield 12" DMD Heavy Duty

LATHES

Mattison 55C BB Live Tailstock

MORTISERS

Northfield chisel mortiser, motor driven
Wallace chisel mortiser, motor driven

MOULDERS

Mattison No. 224 9" all electric, hopper fd.
Mattison No. 262 6" Drop Bed DMD
Eaglesfield 6" DMD BB All Electric
Yates C55 9" DMD All Electric
Yates American C55 9" DMD All Electric
S.A. Woods No. 107 12" 5 hds., belt driven
S.A. Woods 701 all electric DMD 12"x4"
S.A. Woods N. 131 9", belt driven
American C4A 8"x4" B.D.

PLANERS

American Saw Mill Pony 24" 5 HP CMD
Buss 30"x8 No. 4ML DMD Motor, sectional feed roll, sectional chip breaker Knife Grinder
Buss No. 4 BB 30" single Sec. Feed & Chip CMD Knife Grinder
Northfield 24" sinale, MD motor fd. No. 5
Whitney No. 32 36" BB CMD Knife Grinder

PLANER & MATCHER

Fay & Egan No. 156 20"x8" 6 hds., belt dr.

SANDERS

Peerless 9", 14" and 20" horizontal
Peerless 9", 14" Vertical
Vonnegut Vertical drum Sander
Wysong & Miles, Oakley, Mattison belt
H. B. Smith 42" 3 drum, endless bed
Yates 42" 3 drum Belt drive

SAWS - CUT OFF

Porter C43 5 HP DMD BB
Beach 5 HP DMD BD
DeWalt BB DMD 10 HP with water pump and 2 vises Metal Cutting Model ME-2
Heston & Anderson No. 5, No. 25 & No. 55
Multiplex 5 HP DMD BB
Unipoint 3 HP DMD BB
Wallace 2 HP DMD BB
DeWalt 1 to 5 HP DMD BB

SAWS - BANDSAWS

American BB No. 4 40" rip and resaw
36" American, Tannewitz, Crescent, Oliver
27" Crescent Band Saw
32" Crescent guarded BB VBD
Northfield BB & DMD 20" to 36"
Oliver 30" DMD Fully Guarded

SAWS - RIP SAWS

Diehl BB MD MF No. 75 10 HP
Diehl BB No. 77 DMD 15 HP
Sinker Davis, self feed gang, BB belt dr.
Hermance Straight Line Plain Bear., BD

SAWS - VARIETY

American Saw Mill 5 HP DMD Tilt Arbor
American No. 10 tilt top belt drive
BM Root tilt top belt drive
Northfield Tilt Top DMD
Towsley DMD Tilt Arbor 5 HP
Fay & Egan DMD Tilt Arbor 5 HP
American Sawmill Tilt Arbor DMD 5 HP
50 other makes to choose from

ROUTERS

Ekstrom Carlson No. 434
Ekstrom Carlson New No. 232
Ekstrom Carlson No. 126
Onsrud 240D

SHAPERS

McCartney BB 1 spindle
L. Powers single BB - MD
Union Single spindle BB MMBD
Onsrud No. 200 Single 15,000 RPM
Whitney 2 sp. automatic BB MD No. 102
Whitney single 153 DMD and Belt Drive
Whitney single No. 182
Yates N2 BB MD
Yates N1 Double Spindle BB BD-2-7½ HP

TENONERS

Crescent single end, 5 head individual motor drive, BB
American No. 1 Single end belt driven
Newman single end BD
Greenlee Single 531 BB 5 heads

MISCELLANEOUS

Electric Carpenter 5 machine combination all ball bearing motor driven.
NEW—Taylor caterpillar clamp carrier 60 sections, 6½' centers, 32" wide clamps, air rotation.
Jenkins Veneer Jointer
Evans Ring Joint Machine
Union case clamp.
Covel Hanchett Band Re-saw grinder MD
Morgan Double Lock Corner No. 6, 12"x27"
Fay & Egan No. 470 Jigsaw
Smith & Phillips pulley pocket machine

Endless canvas belts, large variety of lengths and widths, also sand belts for Skilsaw, Porter Cable and Vonnegut brush sanders. Accessories and supplies, tremendous lot both new and used. Also band and resaw blades.

WE PAY CASH FOR ENTIRE PLANTS OR INDIVIDUAL MACHINES

American Machinery & Motor Co., Inc.

22 HOWARD ST. NEW YORK 13, N. Y.

Check this list... DEPENDABLE HACKETT QUALITY Now!

NEW MACHINES—Ball Bearing Motor Drive—IMMEDIATE DELIVERY

Hand Jointers 6" to 24" — **Mitre Saws** — **Self-Feed Rip Saw**
32-in. Circular Resaw — **Electric S. E. Tenoner** — **24-in. Single Planer**
Multiplex Saws and Delta Machines

BAND SAWS
Tannewitz-Greenlee-American-Crescent-Moak 36" BB M.D.
West Side 36-in. V-belt, M.D.
American 42" V-belt, motor drive
Tannewitz 42" M.D.
Buss 36 in. bab.-brg., V-belt, motor drive

BAND, RIP AND RESAWS
Yates No. 312 44" chain-feed hand rip
McDonough 62" and 44" vertical band resaw
Mershon 42" Twin Band Rip, B.B.

BORING MACHINES
New Wysong and Miles sgl.-spdl. Vert., d.m.d.
Greenlee 356-P Single Ver. power feed
Andrew single spindle vertical, motor drive
Greenlee 363-6 spindle, Univ. Vertical, M.D.
Root "B-M" 16-spindle, cluster hd. motor dr.

BLOWERS AND FANS
American No. 80E with 40 h.p. coupled motor
Clarage type IE Model II. Ball Bearing.

CLAMPS—GLUE ROOM EQUIPMENT
Greenlee No. 509 frame and furniture clamp
Black Bros. 30-section, 10-ft., power-feed, ten Style E clamps per section, jaws 7-in. high, opening 24-in.
Taylor 6-ft. 12-sec. wheel type clamp carrier

FILING ROOM MACHINERY
Rogers 38" cup wheel auto knife grinder
Hanchett No. 608 lap gr. b.b. max. cap. 8" wide
Covel-Hanchett No. 325 thin knife grinder
Black Diamond No. 5 circular saw filer m-d.

JOINTERS
8" American "Clement" long tables
Yates No. 213 Continuous feed direct M.D.
American No. 1, 24-in. ball-brg., motor drive
Porter, American, Oliver, Sidney, Fay & Egan, from 8" to 30" wide-several have feeding attachments-tell us what you need.
Yates No. 199, 20-in. rd.-hd., V-belt, m-d.

LATHES
Whitney 50-in. backnife, gage, lathe
Yates-American T5 Auto. Shaping, M.D.
Mattison No. 214 copying lathe
Oliver 12"x6' bed speed lathe, d-c mtr. in head
Blount 6-in. 6-ft. speed lathe

MORTISERS
Greenlee No. 228 vertical automatic H.S., m-d.
New Britain No. 2 Chain, with motor
Northfield hydraulic chain, motor dr.
Greenlee No. 227 hollow-chisel, belt drive
Woods No. 131—9" coupled motor

MOULDERS
Yates No. C3 4" fast feed, with motor
Yates No. 108 10" belt drive coupled motor
Newman 4"x4" all Electric
Woods 132M 6" Electric
Smith 6-in. belt drive with motor
Vonnegut 8-in. elec. moulder & freq. changer
Yates C-88, 8-in. all electric

NAILING MACHINES
Auto Nailer "Blue Model" M.D.

PLANERS
Buss 4-L, 30-in. round-head, motor-dr.
Yates Amer. J18, 18" single B.B., D.M.D.
Yates No. 156 20" dr. hd. m.d.
F & E No. 158 24-in. single, dir. m-d.
Buss 6A 36" 6-roll single dir. m.d.
Yates No. 177, 30x12" double motor drive
American No. 80, 15-in. double, heavy duty
Yates B-2 36 in. double, motor-drive

ROUTERS
Carter Type TR, motor-drive 15,000 r.p.m.
Ekstrom-Carlson No. 126, ball brg., motor-drive

SHAPERS
Porter No. 103 single, ball-bearing, motor-drive
Whitney No. 134 double spindle dir. M.D.
Amer. No. 20 dbl.-spdl. dir. M.D. Freq. Chgr.
Whitney No. 165 S.S., motor on arbor
Onsrud W-248 single, ball bearing
Whitney No. 282 sgl. D.M.D. 56"x40" table
Onsrud No. 122 Automatic 40" table
Onsrud W125 Automatic 84" cap.

SANDERS
Yates No. 430 hand block belt, motor dr.
Yates No. 421, 49-in., 6-drum with motors
Yates 401-49" roll feed, M.D.
Solem No. 370 43" 2 drum End. Bed
Fay & Egan 30" 3-drum roll feed
Mattison No. 124, 6-ft. auto. stroke, m.d.
Buss 2 spindle vertical, oscillating
Wysong & Miles No. 164 universal
Yates No. 431, 43-in., 3-drum end-bed, m.d.
Porter-Cable 15 in. disc, motor drive

MITRE SAWS
Delta 10-in. tilt-arbor with motor
American 12-in. tilting-arbor, motor-drive
Wallace 8" tilt-arbor, 1 H.P. 1-ph. motor
American Dbl. revolving Arbor 5 HP Belted mtr.
Whitney No. 77 tilting arbor, direct m.d.
Dodds tilting-table, V-belt, motor-drive

CUT OFF SAWS
DeWalt Radial Arm, 5 HP motor
Jenkins No. 97, 103x48" double end, chain-feed with copes, direct motor-drive
Greenlee No. 451 auto., cut-off and dado
Buss double cabinet type, motor drive
Porter 43-20B 36-in. stroke, motor on arbor
Fay & Egan No. 307 butting saw
American 12-in. tilting-arbor, motor-drive

RIP SAWS
Yates G-2 Chain feed, B-B. mtr. dr.
Greenlee 426 Roll Feed with motor

TENONERS
Fay & Egan 505 electric with copes
Greenlee No. 534, tilting spindles, dir. m-d.
American single-end with copes, rolling table
Jenkins No. 95 double end, jump dado, d.m.d.

This is only a partial list — send or call your inquiries

1965 E. Milwaukee **Detroit 11, Michigan**
Telephone TRinity 2-6442

New OR Rebuilt TO NEW STANDARDS

MOTORIZED OR BELT DRIVE MACHINES

BAND SAWS
20"—27"—30"—32"—36"

BORERS
Single spindle, horizontal & vertical
2 spindle vertical, foot feed
4 spindle vertical—boring area 40"x12"
Andrews Mult. Vert. power feed, boring area 30"x24". Number of heads to suit job
Miscellaneous Borers for various jobs

JOINTERS
8"—12"—16"—20"—24"—30"
30" Jointer & Feeder, B.B., D.M.D.

MOLDERS
Greenlee 8" 4-side B.D.
Woods 9" 4-side B.D.
X-L Moldmatchers, 4" & 6" Electric

MORTISERS
Greenlee No. 228 Vertical, motor
Greenlee horizontal, foot feed
Northfield, vertical, foot feed

PLANERS
Single—12"—16"—20"—26"—30"—42"
American No. 145, 30"x8" Dbl. sect. roll & C.B.
Yates B-2, 30"x8" Dble. sect. roll & C.B., D.M.D.

SANDERS
Amer. 42" 3-drum, roll feed, M.D.
F & E 30" 2-drum, roll feed, M.D.
Oliver No. D-183, belt, M.D.
Hand Block belt—various types

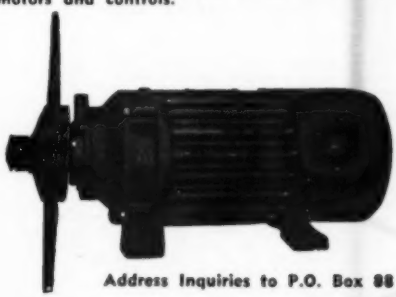
SAWS, VARIETY
Tilting arbors, 5 & 7½ h.p.
Tilting Table, W & W/O Borer
Saw & Dado, foot treadle
Radial Arm, 2—3—5 H.P.
Henry 48" wide Radial Arm, 5 h.p.
Double End, 6' 6", with double end arbors

RIP SAWS
Sinker Davis, self-feed
Mattison No. 202 St. Edge D.M.D. prac. new
Several Hand Feed Saws

SHAPERS
Northfield, single Hi-speed D.M.D.
Amer. Sgle. Spindle, heavy duty
Double Spindle—various makes

TENONERS
Single End—Copes & Cut-off

SAW ARBOR MOTORS
Totally enclosed, dust proof, fan cooled, ball bearing motors, 3600 R.P.M. From 1 h.p. to 15 h.p. Measures only 3¼" from center of motor shaft to flatted top, facilitating the use of the smallest possible diameter saw blade. 1-2-3-5 horse power motors in stock. A large stock of Standard Frame 3 phase motors and controls.



MUST MOVE QUICKLY
1951 MODELS
The latest improved machines, all direct motor driven, have had only about sixty days' usage. They must be moved quickly owing to customer liquidating the business. The machines are mentioned briefly — write for details.

BUSS TYPE L 30" SINGLE SURFACER
MATTISON No. 202 STRAIGHT LINE RIP SAW
CARTER GUIDE LIGHT
HENRY 48" RADIAL ARM SAW
NORTHFIELD 16" JOINTER
DELTA 12" TILTING ARBOR SAW
EKSTROM CARLSON NO. 111 EDGE BELT SANDER
AMERICAN 30" JOINTER AND FEEDER

Our stock of about 150 machines of various types and makes enables us to fill your requirements for either belt or motor driven machines, new or rebuilt to new standards. We are briefly listing just a few from our large stock.

Address Inquiries to P.O. Box 88

Engineers and Re-Manufacturer

The Osborne and Sexton MACHINERY CO. COLUMBUS 16, OHIO

"If it's for Woodworking . . . We Have It"

BAND SAWS:
American 20"
Crescent 20" Ball Br. New
Crescent 36" belt or motor
Crescent 36" Ball Br. M.D.
Fay & Egan No. 345 30"
Northfield, 20" M.D. New
Lehman 30" Bab. Br. $125.00
Tannewitz 36" 7½ h.p. Motor D.M.D.

BAND RESAWS:
Connell & Dengler 60" Vertical, $1800.00
Fisher 40" Vertical $1200.00 5" blade
Yates V-4 54" Vert. Bab. B. M.D. takes 7" wide blades. Filing Room Equip. if wanted.

BORING MACHINES: Fay & Egan No. 190 Single Spl. Vert
Andrews 32" vert. multiple
Andrews 32" Double Col.
Andrews 72" Vert. Ball Br. M.D. 12 spindles
Andrews 32" Sgl. Col. Vert. 4 spdl.
Andrews 32" Dbl. Col. Vert. 4 spl. Power Feed
Fay & Egan Vert. Multiple Spindle M.D.
Root Single Spl. Motor on Spl.
Dennis Sgl. Vert. Universal
Greenlee Post Borer

BOX MAKERS MACHINERY:
Hall & Brown Box Board Matcher
Tide Box Makers Rip Saw M.D.

CLAMPING MACHINERY: American fig. 8852 8 ft.
Handy No. 79 Case Clamp
Rowley & Hermance Door Clamp 3½ x 8 ft.
Lancaster Pneumatic Chair Clamp
Black Bros. Chain Clamps
3000 Spring Clamps No. 2 and No. 3
Greenlee No. 602 Q. A. Sash Clamp

DADO SAWS: Fay & Egan No. 5 C.O. and Dado
American No. 1 Dado Saw Auto.
Hall & Brown No. 134 Comb. C.O. Dado Saw Pwr. Fd.

CUT OFF SAWS:
Beach 103" M.D. Dbl. Cut Off Saw
Greenlee No. 453 Auto. Railway C.O. 7" cap.
Comet Timber C.O. 10 h.p. 44" blade
Swing Cut Off Saws (several)
Fay & Egan Table C.O. Saw

DOWEL MACHINE: Fay & Egan No. 406 Rod Mach.

JIG SAWS: Oliver No. 173-B Ball Br. Self Contained Motor built in. New at Bargain Price
Beach No. 1 Tilting Table Scroll Saw
Jones Superior M.D. Self Contained

JOINTERS: Crescent 12" B.B. 4 Knife
16" Fay & Egan No. 316 B.B. M.D.
Smith 16" 4 knife Jointer
Fay & Egan 20" rd. hd. Jointer
Fay & Egan No. 316 20" Rd. Hd. M.D.
Fay & Egan 24" No. 115 Belt or Motor Dr.
Moak 12" B.B. Jointer M.D., New

KNIFE GRINDERS:
Rogers 44" Auto. w. Water attach.
Fay & Egan No. 253 St. Wheel Auto.

LATHES: Oliver 12"x5 ft. Sgl. Ph. Motor Headstock
Goodspeed type AV-4 Automatic
Wood Lathe Sets 12" to 24" swing
Goodspeed Variety Hand Feed
American No. 7, 32" Patternmakers

MORTISERS:
New Britain No. 4 Chain with H. C. Attach.
New Britain No. 7 Chain, Compound Table M.D.
Wysong & Miles No. 134 H. C. Auto. Feed
American No 20 H. C. Comp. Table M.D.
American H C. Horizontal Auto. Feed
Crescent Hollow Chisel Mortiser

MOULDERS:
American No. 3 Heavy 6" 4 side
American 8" 4 side $750 (good)
Fay & Egan No. 207 7" 4 side
Hermance No. 50 8" 4 side Bab.
Hermance 10" 4 side
Fay & Egan No. 184 12" 4 side
American 2 side Sticker

NAILING MACHINES:
Grammes 4 track Cigar Box Nailer
Doig 2 track Cigar Box Nailer
Doig 3 track Close Back Nailer
Doig 18 track Nailer-Cleater

PLANERS—DOUBLE:
Berlin 30"x12" $750.00
American 26"x8" Double
Whitney No. 24 30"x7" Dbl. Planer, B.B., M.D.

PLANERS—SINGLE:
Crescent No. 224 24"x6" Feed M.D.
Fay & Egan No. 2 24"x6"
American No. 1 20"x6"
Powermatic 12"x4" M.D.
Sidney 18"x8"
Solem 12" D.M.D.

RADIAL SAWS:
NEW MULTIPLEX RADIAL SAWS IN STOCK:
Comet 3 hp., 1 ph. New
Comet Cub ½ hp., 1 ph.
DeWalt 5 hp., 3 ph. G.E. type rebuilt
Walker Turner 3 hp., 3 ph.
No. 20-A ½ hp. single ph.

RIP SAWS:
American No. 2 Power Feed, M.D.
Falls No. 103 St. Line B. B. 15 hp. motor
Falls No. 103 St. Line B. B. Belt Dr.
Mereen Johnson No. 441 Gang
Greenlee No. 429 Power Feed
Fay & Egan Heavy Hand Feed 10" cap.

ROUTERS: Kelley Elect. Stair Router 3 ph.
Cincinnati Elect. Stair Router
Hunter Elec. Stair Router $75.00
Duro Elect. Floor Type
Portable 1 hp. and 2 hp. New

SASH COPERS:
American Foot Power Sash Coper
Electric Bench Type Sash Coper

SAW TABLES:
Yates-American No. 0 Variety Motor Arbor
Crescent No. 3 and 5 Universal

SANDERS:
American-Col. 42" 3 drive
American No. 15 24" single dr. Hand Feed
American No. 15 30" single dr. Hand Feed
Beach No. 201 M.D. Belt Sander (New)
Mattison No. 115 Variety Belt Sander
Porter Cable Oval. Spindle, M.D.
Porter 15" Disc M.D.
Wysong & Miles No. 171 Belt Sander
Yates American Comb. 15" disc & Drum M.D
Yates No. 401 42" 3 Dr. Roll Feed

SHAPERS:
American No. 1 Sgl. Ball Br. M.D.
Delta Floor type M.D.
Crescent Single Ball Bearing M. D.
Crescent S-2 B.B. M.D.
Fay & Egan No. 265 Dbl.
Fay & Egan No. 552 Single Ball Bearing M.D.
Double Spdl., B.B. Mtrs. on spdl., 3000 or 7200 rpm
Porter No. 105 B.B. M.D. (late)

TENONERS:
American No. 1 Copes and C. O. Saw
Crescent T-3 Electric Tenoner
Fay & Egan No. 2 2 copes
Powermatic B. B. Tenoner
Smith Sgl. Heavy Copes & C. O. Saw

TIMBER PLANER:
Yates P-12 12"x20" 4 side

VENEER CLAMPS: 5—38" 3 screws
4—29" 2 screws

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124-26-28 Boulevard of Allies Pittsburgh, Pennsylvania

YOU'LL SAVE MONEY AND MODERNIZE YOUR PLANT BY BUYING Fader REBUILT MACHINERY

FADER REBUILT MACHINERY

BAND SAWS
Crescent 36-in., ball-bearing, motor-driven.
Crescent 20-in., ball-bearing, motor-driven.
Superior 42-in. ball-bearing, motor-driven.
American No. B-38, 38 in., ball brg., m-dr.

BORERS
Root Sgl. Spdl., vertical, ball-bearing, d.m.d.
Andrews 60 in. 16-spdl. vert., m-d., power-fd.
Valley City 2-spdl. adj. radial, motor-dr.
Superior 2-spdl. adj. radial, b-b, dir. m-d.
Superior 3-spindle adjustable horiz., m-d.

CLAMPS—ASSEMBLY
Handy revolving case, 48-in. opening.
Handy revolving case, 60-in. opening.
Handy No. 51 cabinet clamp, air operated.
Bell 4-way Hi-Jaw, air-operated.
Bell, 4-way frame and chair back, air-oper.
Bell No. 95 revolving case clamp, air-oper.

CLAMP CARRIERS
Taylor 30-sec. 6½-ft. wide, four 38-in. clamps per section.

DOWEL MACHINERY
Bell No. 7 automatic gluer and dowel driver
Bell No. 8 Automatic Gluer and Dowel Driver
Hawker No. 2 cap. ¼ to 2-in., b-b, m-d.

FACERS—JOINTER FEEDERS
American 24-in. ball-bearing, round head, motor-driven, with Billstrom automatic feeder.

JOINTERS
Diehl No. 60 cont. chain-feed, b-b, d.m-d.
Fay & Egan No. 217 continuous chain-feed.
American 12-in. round head, motor-driven.

MORTISERS
Greenlee No. 228 vert., hollow-chisel, m-d.

MOULDERS
American No. 1, 4-in., 4-side, motor-driven.
American No. 1, 6-in., 4 side, motor-driven.
Eaglesfield 4-in., 4-side all-electric, b-b.
Mattison No. 262, 6-in., 4-side, all-elec., b-b.

PLANERS
Parks 12-in. single, ball-bearing, motor-dr.
Buss No. 4, 30-in. sgl. cabt., d. m-d, b-b.
Yates No. 156, 26-in. sgl. cabinet, motor-dr.
Superior 24-in. single, motor-driven.
Whitney No. 32, 30-in. sgl. cabt., d. m-d, b-b.
Amer. No. 666, 30-in. dbl. cabt., d. m-d, b-b

ROUTERS
Ekstrom Carlson No. 327 High Speed, b-b, d. m-d.
Onsrud W-240-D High Speed, b-b, d. m-d.
Porter No. 502, 2-spdl., b-b, d. m-d.

SANDERS
Ekstrom Carlson No. 23 scroll, b-b, d. m-d.
Pearson edge moulding, ball-brg., dir, m-d.
American 42-in. 3-drum, roll-feed, motor-dr.
Smith 43-in., 3-drum endless-bed, dir. m-d.
Amer. No. 2, 24-in. disc and oscillating spdl.
Mattison No. 138 hand block belt, motor-dr.
Mattison No. 172 oscillating edge belt, m-d.
Prybil 20-in. horizontal belt, motor driven.
Porter-Cable 10-in. vertical belt, d. m-d, b-b.
Delta 6-in. adjustable belt, ball-brg., m-d.
Nash No. 10, 48-in. 6-spdl. auto. turning, m-d.

SAWS—CUT-OFF
DeWalt GP radial type, ball-brg., dir. m-d.
Diehl No. 725 hydraulic, auto. dir. m-d. b-b.
Bell No. 12-B dbl. mitre & cut-off, b-b, d. m-d.
Racine floor type, motor-driven.
Fay & Egan double-end, motor-driven.
Bell No. 16 Chop Saw, b-b, m-d. Foot Operated.

SAWS—RIP
American No. 15 chain-feed, motor-driven.
Diehl No. 75 Chain Fd., ballbrg., dir. m-d.
Hermance Heavy Duty, Gang, ballbrg., dir. m-dr.
Yates G-2 chain feed, dir. motor-dr., ball-brg.
Mattison No. 207M chain-feed, b-b, d. m-d.
Eaglesfield chain-feed, dir. motor-dr., b-b.

SAWS—VARIETY
Yates-American tilting-arbor, b-b, dir. m-d.
Delta Uni-Saw tilting-arbor, b-b, direct m-d.
American No. 1, tilting-table, motor-driven.
Pettingell tilt arbor, roller table, m-d.

SHAPERS
Whitney No. 393 automatic sgl-spdl., ball-brg., dir. motor-dr., with frequency changer.
Onsrud W125, 72-in. auto., multiple stations, ball-brg., dir. m-d, with freq. changer
Buss sgl.-spdl. hi-speed, dir. m-d, ball-brg.
Oliver sgl-spdl. hi-speed, d. m-d., ball-brg.

SPREADERS—GLUE
Black No. 6, 18", Hand Feed d. m-d.
Francis Mod. G, 45" dbl. roll, for cold glues, m-d.
Advance 24-in. dbl-roll, equipped for steam.
Bell No. 13 auto. dovetailer gluer, elec. heat.

TENONERS
McKnight No. 71C chair back tenoner, m-d.
Towsley single-end, tenon heads, lower cope, cut-off saw, motor-driven.

VENEER MACHINERY
Dennis continuous-feed veneer jointer, m-d.
Dennis veneer taping machine, motor-driven.
Jenkins-Fails veneer jointer, b-b, m-d.
Merritt 77" Veneer Clipper, Motor Driven
Capital 54" Veneer Clipper, Motor Driven
Merritt 81x54 in. 3-pl. veneer redrier, d. m-d.

MISCELLANEOUS
Curtis No. 48-M 6' auto. rub. mach. d. m-d.
Sturdivant 55" Shavings Exhaust Fan
Invincible 36-in. shavings exhaust fan
Mattison No. 231 univ. cutterhd. grdr., d. m-d.
Auto-Nailer, floor type, dir. m-d, ball-brg.
Yates-American T-5, 30-in. automatic turning lathe, direct motor-driven, ball-brg.

ALL OFFERINGS SUBJECT TO PRIOR SALE

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FADER WOODWORKING EQUIPMENT QUALITY

A. L. FADER & COMPANY

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SUTTON GUARANTEED

BORERS

Greenlee 4 ft. vertical gang borer
Root Vertical Power Feed Gang Borer
Multiple Spindle Vertical Fay & Egan Borer
Amer. No. 2½ Single Spin. Horiz. Boring Mach.
Yates-American Type U31 Single Spindle Vertical Borer, Direct Motor Driven

CLAMPS

Handy Revolving Case Clamp
Automatic Taylor Panel Flow Glue Spreader
29 Section 6½" Power Operated Billstrom Clamp Carrier
40 Section Taylor Power Operated Clamp Carrier
New Air Operated Frame and Chair Clamps

DOVETAILERS

10 Spindle Dodds Dovetailer
Dodds 12-Spindle Dovetailer
Wysong & Miles No. 290 Auto. Dovetailing Mach.
Wysong and Miles No. 500 and 600 Auto. Dovetailer

GLUE SPREADERS

Practically New Black Bros. 12" Motor Driven Edge Glue Spreader
New Union Conveyorized Edge Glue Spreader
Taylor-Panel Flow Edge Glue Spreader
44" New Black Bros. No. 22-D Double Rubber Roll Resin Glue Spreader.
62" Black Dble. Rubber Roll Resin Glue Sprdr.
54" Union Dble. Rubber Roll Resin Glue Spreader

JOINTERS

Yates-American No. 213 Direct Motor Driven Glue Jointer
Yates-American 16" No. 1 Direct Motor Driven Ball Bearing Hand Jointer
Porter 6" Direct Motor Driven Ball Bearing Hand Jointer

LATHES

Mattison 42" No. 57-D motor drive ball bearing
Mattison 30" No. 55-C motor drive ball bearing
Yates-American 30" T-5 Lathe

MORTISERS

Wysong & Miles No. 288 direct motor driven 6-spindle mortiser
Wysong & Miles No. 286 Hinge Seat Mortiser
Greenlee No. 227 direct motor driven single spindle mortiser

MOULDERS

Vonnegut 4" electric Moulder
Yates-American 4" Type C-88 Electric Moulder
Woods 6" No. 132M Electric Moulder
Newman 6" No. 46 Electric Moulder
Newman 12" No. 27 Ball Bear. Belt Dr. Moulder
Practically new 12" Vonnegut Electric Moulder
Hayes Sash & Door Sticker w/Plowing & Boring

SINGLE PLANERS

Buss 30" Direct Motor Dr. Ball Bear. Sgl. Planer
Buss 36" Direct Motor Dr. Ball Bear. Sgl. Planer
New Crescent P-24 Direct Motor Dr. with Grinder
Greenlee 36" No. 110
Yates-American 24" No. 1 Direct Motor Driven Ball Bearing Facer with Four Post Herzog Feed

SANDERS

Yates-American 42" No. 431 Direct Motor Driven Endless Bed Sander
Mattison No. 124 Automatic Stroke Sander
Wysong & Miles 8' No. 294 Automatic Stroke Sander Direct Motor Driven Ball Bearing
Pearson Waterfall Sander
Oakley Semi-Automatic Stroke Sander
Oakley Model H drawer Sander
Nash No. 50 and No. 25 Turning Sander
Wysong & Miles No. 604 and No. 315 Edge Belt Sander, practically new

BAND SAWS

American No. 4 Band Resaw
J. A. Fay & Co. 36" Band Saw
40" L. Powers Vertical Combination Band Resaw and Scroll Saw.

CUT-OFF SAWS

Wilkin-Challoner Chain Feed Double Cut-Off Saw and Panel Sizer
Yates-American No. 51 Direct Motor Driven Swing Saw
2 Beach Direct Motor Driven Ball Bear. Double Cut-Off Saws & Rip Saws for Sizing lge. Panels

RIP SAWS

New Marion Glue Joint Rip Saw
Mattison No. 207 Direct Motor Driven Ball Bearing Glue Joint Rip Saw
American No. 15 Ball Bearing Chain Feed Rip Saw

VARIETY SAWS

Bell No. 12 Direct Motor Driven Ball Bearing Double Miter Saw
Yates-American No. 1 Direct Motor Driven Ball Bearing Variety Saw
Buss Direct Motor Driven Ball Bearing Variety Saw

SHAPERS

Whitney No. 251 Double Spindle Electric Shaper
Whitney No. 234 Double Spindle Electric Shaper
Whitney No. 393 Automatic Single Spindle Shaper
Onsrud W-125 Double Spindle Automatic Shaper
Onsrud W125 Single Spindle Automatic Shaper

TENONERS

Fay & Egan No. 505 Direct Motor Driven Ball Bearing Single End

VENEER MACHINERY

Francis 76" Hydraulic Veneer Clipper
Dennis Veneer Taping Machine, Motor Driven
100" Merritt Veneer Clipper
Merritt 8 and 10 plate redriers 84" by 54"
Francis Hydraulic Veneer Press 84" by 36". Large quantity irons and clamps, cauls, head blocks, and overhead crane.
Merritt 13 Plate redrier 60 by 36

MISCELLANEOUS

Defiance Electric Router
New Raimann Automatic Knot hole borer & plugger
7½ KW Motor Driven Frequency Changer
Woods Motor Driven End Matchers—Practically New

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TOP VALUES

Earle Hart's

USED AND REBUILT

WOODWORKING MACHINERY

ROCK BOTTOM PRICES

* Indicates Ball-Bearing and Motor Driven

BORERS—Horizontal & Vertical
Towsley two-spindle horiz. radial borer.
* Oliver No. 71—3 spindle horizontal borer.
Greenlee No. 368-30" Mult. Horiz. Borer.
Andrew 48" & 72" Mult. Horiz. Borer.
* Wysong & Miles No. 283-B Vert. Sgl. Spl. Borer.
* Greenlee No. 386 8-ft. Vert. Multiple Borer
* Greenlee No. 369—48" Vert. Mult. Borer.
Andrews 60" multiple vertical borer.

CHAIR MACHINERY
* McKnight double end sawing and boring machine.
* McKnight 4CM horiz. and vert. borer with double end sawing.
Pringle & Brodie horizontal borer.
McKnight No. 1E saddle seat machine.
Bell No. 8 dowel gluer and driver.
Dauber-Bell dowel cutter and pointer.

CLAMPING MACHINERY
Taylor-Billstrom-Black 12-18-30-40-sec. clamp carr.
Handy No. 447 Air Operated, 2-way End Clamp.
Handy and Union revolving case clamps.

GLUE MIXERS & SPREADERS
Francis M-7 (75 gallons) Veg. Glue Mixer.
Union 36" and 60" Dbl. Roll Resin Glue Spreaders.
Francis 12-in. edge glue spreader.

JOINTERS
* Fay & Egan No. 506—12" hand jointer.
* Yates-American No. 213 glue jointer.
* Jenkins No. 343-A glue jointer.
* Diehl No. 60 glue jointer.

LATHES
* Mattison No. 55 C Auto. Turning Lathe, b.b.
Mattison No. 210 copying lathe.

MORTISERS
* Greenlee No. 227 automatic hollow chisel mortiser.
Greenlee No. 228 auto. hollow chisel mortiser.
New Britain Nos. 2 and 7 chain saw mortiser.
* Whitney No. 67 horiz. osc. bit mortiser.

MOULDERS
* Mattison No. 276—6-in. electric moulder.
* Vonnegut 6-in. electric moulder.
* Yates No. 108—10 in. heavy-duty moulder.
Yates C3A-4" belt drive moulder.

PLANERS—Facing
* Whitney No. 32—30" single planer.
* Porter 24" facing planer—Herzog feed.
* Yates-American No. 3—30" facing planer. Herzog feed

PLANERS
* Buss 4-A 30 in. single planer.
* Whitney No. 29—36-in. single planer.
* Greenlee No. 110—30" 6-roll single planer.
* Whitney No. 24—30" and 36" double planer.
* Whitney No. 33—40" heavy-duty dbl. planer.
* Yates-American No. 177—30" roughing planer.

ROUTERS
* Onsrud W-240 heavy duty electric router.
* Porter No. 600 and 610 heavy duty elec. router.

DRUM SANDERS
Yates No. 413 31-in. 2-drum endless bed sander.
Yates No. 431—43" 3-Dr. end. bed mtrzd.
* Solem 8 3-M 73" 3-drum endless bed sander.
American No. 9—61" 3-drum roll feed sander, mtrzd.

SANDERS—Belt & Miscellaneous
Curtis No. 8 semi-automatic stroke sander.
Mattison No. 124 auto. stroke sander.
* Wysong & Miles No. 277 hand block belt sander.
Nash No. 10 & No. 25 auto. spindle sanders.
American No. 11 horiz. surface sander.

SAWS—Band Scroll & Resaws
* Tannewitz Type G, 36-in. band scroll saw.
* Superior 36-in. band saw—Carter wheels.
* Fay & Egan No. 50—36" band saw.
* McDonough 44" vertical band resaw.

SAWS—Cut-Off
* Porter 43-208 straight line cut-off saw.
* Yates-American G-44 straight line cut-off saw.
* Jenkins No. 105-A Dbl. cut-off and mitre saws.

SAWS—Rip
* Diehl No. 75 straight line ripsaw.
* Mattison 205-207 and late model 202 straight line ripsaws.
* Yates-American G-77 straight line ripsaw.
Greenlee No. 426 self feed ripsaw.

SASH & DOOR MACHINES
Bell No. 5-B stile and rail borer.
* Bell No. 11 power door clamp.
Bell No. 7 dowel driver and gluer.
Millbury pocket cutter.

VARIETY SAWS
* Tannewitz Type J tilting arbor variety saw.
* Whitney No. 61 tilting arbor variety saw.
* Fay & Egan No. 500 tilt-table variety saw.
* Tannewitz tilt-table variety saw, b.b.
* Baker double arbor variety saw, b.b.
* Yates-American No. 8 saw and dado machine.

SHAPERS
* NEW Crescent No. S-2 single spindle shaper.
* Porter No. 103 single spindle shaper.
* Porter No. 201 double spindle shaper.
* Greenlee No. 180 double spindle shaper.
* Whitney No. 351 double spindle, 12½ HP motors.
* Whitney No. 393 automatic, single spindle shaper.
* Onsrud No. 124 automatic single spindle shaper.
* Whitney No. 202 automatic double spindle shaper.

TENONERS
* Greenlee No. 532 single end tenoner.
Greenlee No. 530 single end tenoner, b.b.
* Wilkin-Challoner No. 70 - 96" double end tenoner.
* Jenkins No. 95—96-in. double end tenoner.
Jenkins No. 96 60-in double end tenoner, b.b.

VENEER EQUIPMENT
Dennis No. 2 veneer taper.
Francis 30"x72" hyd. veneer presses.
Merritt 84x54—8—10—12 plate redriers.
Francis 30x80-in. hand screw veneer press.
Large quantity "I" beams and turnbuckles.

MISCELLANEOUS MACHINES
* Hanchett GK 36-in. auto. knife grinder.
Food Machinery Co. Model AC-2 boxmaker.
* Woods No. 227 side head grinder.
NEW Hanchett No. 133 auto. band resaw sharpener.

This is only a partial list. If the machine you want is not shown, write us.

STANDARD of COMPARISON

THE "HART" LINE

Earle Hart WOODWORKING MACHINE COMPANY

565 WEST WASHINGTON BOULEVARD CHICAGO 6, ILL. RAndolph 6-4970

SCOTCH PRICES

(Denotes Better Buys)

Bandsaw, with resaw attachm., F&E No. 146, 42", 20 h.p. ballb. mtr.
Bandsaw, ballb., Sidney 36", 5 h.p.
Belt Sander, W&M No. 171, 90" roller table.
Borer, horiz., 2-spdl., Oliver, ballb., mtr.
Boxboard Printer, C&D 20"x46", 2-color, chain-fd.
Clamp carrier, Billstrom 39-sec., 40"x90", 4 clamps per section.
Clamp, Handy No. 195, mitre.
Cut-Off Saw, dbl.-end, Wilkin-Challoner, elec., chain-fd., 60"x40".
Cut-Off Saw, dbl., Buss 80"x20".
Cut Off Saw, dbl., Beach 80"x24", roller table.
Factory Trucks, 24"x48" and larger.
Dust Collector, Dustkop, 3 h.p.
Gluer, 8", Black, m.d., heating element.
Jointers, incline bed, ballb.: Newman 16"; Sidney 12"; mtrs.-on-cyls.
Lock Corner Cutter, dbl.-end, B&M auto.
Nailer, Morgan 9-tr., o.b., clincher, compression chucks, mtr.
Nailers, Morgan & Doig 6 to 28-tr., open & cl. back, with and without clinching att.
Moulder, elec., Mattison No. 226, 12".
Planer, single, Yates-Am. B-7, 4-kn. rd. hd., 20 h.p., 3600 rpm cyl. mtr., 7½ h.p. fd. mtr., will feed 110' per minute.
Planer, dbl., Am. No. 80 fast-fd., 30"x6", 8-kn. rd. hds., direct motor driven.
Planer & Matcher, 4-s., F.&E. No. 40.
Ripsaw, self-fd., Sinker Davis 10-h.p.
Router, E-K No. 327, 3 h.p.
Sander, 3-dr., e.b., Solem SE3, 49", mtrs.
Sander, 2-dr., Am. 12", motor.
Sanders, 2-dr., F-E 24"; Beach 42", ballb., mtrs.
Sander, auto. stroke, 8' Mattison No. 124.
Sander, horiz., flat belt, B.&M., 20", 7½ h.p.
Sander, edge belt, Ekstrom-Carlson No. 111, mtr.
Sander, Vonnegut, brush, 1 h.p.
Sander, Delta 6", 1 h.p.
Sander, scroll, Indiana, mtr.
Saw, dbl.-end, Bell, mitre, 72".
Screw driver, auto., Reynolds No. 202.
Shaper, 2-spdl., Whitney No. 134, freq. changer.
Stapler, 4-hd., Saranac 60", open-back.
Surfacer, e.b., dbl., Egan 26"x12", 20 h.p.
Sticker, 3-s., Wilkin-Challoner, ballb., mtrs.
Tenoner, double-end, Greenlee No. 545, elec.
Tenoner, single-end, Greenlee No. 532-A, 4 mtrs., used one week.
Veneer Presses, Francis, 120"x24", 6-sec., 12 screws
Veneer Presses, Tewsley 24" and 38", 3 screws.

Sundry Other Machines In Stock

EDGAR G. BICKLER

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Mattison No. 207 chain fd. Rip Saw, B.B., D.M.D.
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Buss Double Cut-off Saw, M.D.
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Boice-Crane B.B. Single, M.D.
Whitney No. 8 Double, Ball Bearing
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Colladay & American Single End
Fay & Egan No. 70 Single End
Power Single End, motor driven
VENEER JOINTER
Jenkins No. 23 DMD, Ball Bearing

B. M. ROOT CO., YORK, PA.

HOT-SPRAY HEATER

The Spee-Flo Company, 3603 Harrisburg Blvd., Houston, Texas, announces its new model 202 hot-spray heater. It is a practical unit available for the industrial refinisher who does not use production-line methods.

Model 202, like its predecessor, model 101, uses the original one-gallon paint can as the heating vessel, automatically mixing and heating one gallon of lacquer or enamel to uniform temperature and viscosity throughout.

Among the features of the new model is the thermatrol selector which is entirely enclosed in a vapor-proof case and is now an integral part of the Spee-Flo heater. The timer can be set to the proper weather temperature and will automatically return to the "off" position, at which time the paint will be at proper temperature. If the painter is not immediately ready to use the material, the heater will continue to control the paint thermostatically for as long a time as may be necessary.

Model 202 is ideal for refinishers who use up to three gallons per hour. They can have all the profitable advantages of hot spray without the need to use cumbersome equipment with attendant fluid-line and pump cleaning, characteristic of high-speed production heating units.

National distribution is being achieved somewhat faster than planned due to the unexpected but welcome assistance of major paint and equipment manufacturers and raw material producers.

FORMICA FABRICATING TECHNIQUE

A new six-page illustrated booklet describing a simplified technique for fabricating Formica is now available through the Formica Company's distributors and dealers.

Entitled, "How to Apply Formica," the publication is intended for the use of contractors and carpenters who have calls for Formica installations but do not have access to commercial fabricating facilities.

The booklet provides a detailed description of each step in the fabrication of Formica for kitchen sink counters, bathroom "vanitory" units and built-in furniture.

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Superior No. 145—30" Motor Driven Disc Sander, tilting table
Nash No. 79 Motor Driven Ball Bearing Auto. Turning Sander for handles, etc.
Yates No. 430 D.M.D. Hand Block Belt Sndr.
Loeffler 24" Mtr. Driven Open Drum Sander
Wysong & Miles No. 171 Moulding Belt Sander, vee belt mtr. dr.
J. A. Fay & Egan No. 50—36" Band Saw Machine, vee belt motor drive
Yonnegut 6" Electric Four Head Moulder, hopper feed, rd. hds., jointers
J. A. Fay & Egan No. 377—10" Ball Brg. Moulder, belted mtr. dr. to countershaft
Mattison No. 244 Direct Motor Driven Straight Line Cut Off Saw
Tannewitz 42" Direct Motor Driven, Ball Bearing Band Saw
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McDONALD MACHINERY CO.

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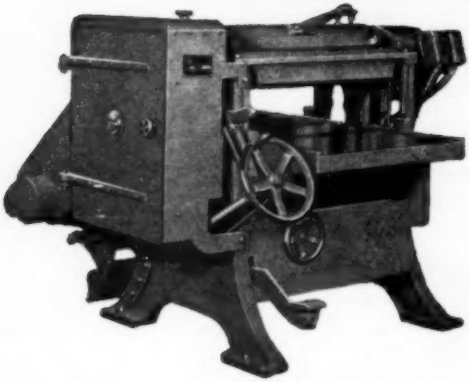
NORTHFIELD No. 5 SINGLE SURFACER



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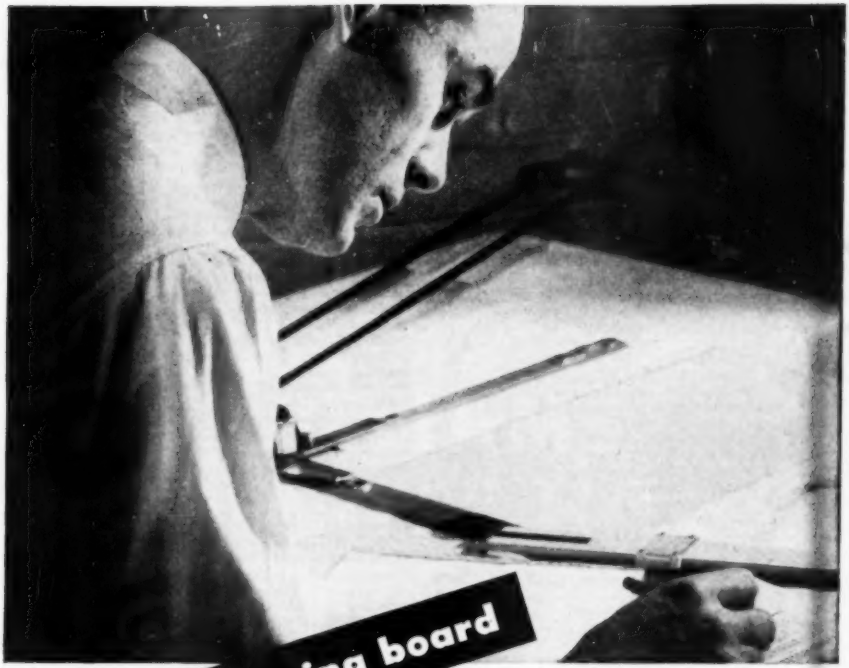

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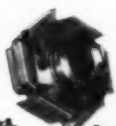

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Diehl can design and build special heads and cutters to solve unusual problems. Diehl's engineering department is always at your service.

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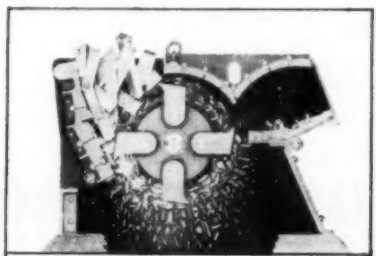
Make Wood Waste Pay Profits!

WILLIAMS "NO-NIFE" HOGS

Cheapest of all fuels, wood refuse properly prepared for burning with a Williams "No-Nife" Hog, will actually show a profit by better utilization for heat and power—by reducing handling costs as much as 75%—by eliminating fire hazards—and by recovering large areas of wasted space.



Here's how the fast-revolving hammers in a Williams "No-Nife" Hog reduce wood refuse by impact.

"No-Nife" Hogs break up waste by impact—with chisel edge hammers that require no daily sharpening—seldom damaged by tramp iron. Mechanical or air conveyors then automatically feed the correctly-sized chips to furnace or burner without manual handling. Get the facts!

Write Today!

MORE PROFIT POSSIBILITIES!

Williams Hogs and Shredders will reduce wet or dry veneer and plywood scrap to uniform size for pneumatic handling—will prepare wood waste for chemical treatment in paper and board mills—will make wood flour and sawdust—and do many other jobs.

Williams also makes Vibrating Screens and Air Separators to operate in closed circuit with other Williams equipment for controlling product size and quality.

WILLIAMS PATENT CRUSHER & PULVERIZER CO.

808 ST. LOUIS AVENUE ★ ST. LOUIS 6, MO.

WILLIAMS

CRUSHERS GRINDERS SHREDDERS

OLDEST AND LARGEST MANUFACTURER OF HAMMER MILLS IN THE WORLD

BUILT BY *Tannewitz*

SAWING MACHINERY *Specialists* FOR OVER 60 YEARS

YOUR SOUNDEST ASSURANCE OF MAXIMUM VALUE IN MITRE SAW BENCHES!

MODEL XJ

(stationary table) may be had with five alternative tables, to give you a machine which is virtually custom built to provide the last degree of efficiency on your particular type of work. Below: Model XJS—with sliding left section table.

When you go shopping for a mitre saw bench keep in mind the very important fact that Tannewitz not only originated the Tilting Arbor Saw, but ever since its inception many years ago, The Tannewitz Works has constantly devoted itself to the development of both structural and functional features that would provide the very maximum of production, accuracy, convenience of operation and long-wearing, trouble-free service. Wherever you go you'll find that they are rated "tops" with the men who operate and own them.

Whether you want a relatively inexpensive mitre saw bench or the finest that has ever been devised, you'll find it in the Tannewitz line. Let us help you select the one best suited to your production requirements. Drop us a line for complete information.

The TANNEWITZ WORKS

GRAND RAPIDS, MICHIGAN

XJSW— with extended table at right

XJSW — with J-430 extended sliding table at left

XJW — with J-420 removable roll-table at left

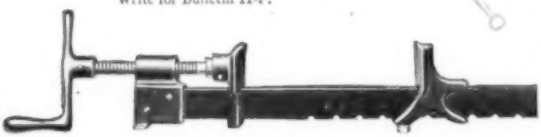
INDIVIDUAL Clamps

RETAINING CLAMP

Black's Superdreadnaught is a superior Retaining Clamp with drop forged head and turnbuckles. It has a tremendous margin of reserve strength without excessive weight or bulk, and is true to pattern, and uniform in all dimensions.
Write for Bulletin 11-F.

DRAW SCREW CLAMP

Black's powerful draw screw clamps which are regular equipment on Black clamp carriers are also available individually. They perform heavy gluing operations beyond the range of ordinary bar clamps.
Write for Bulletin 11-B, Part 5.

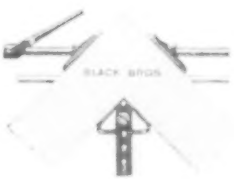


No. 30 STEEL BAR CLAMPS

Black's No. 30 Bar Clamp is a general purpose clamp suitable for all sorts of wide gluing up to 2" in thickness. The Bar is of crucible alloy spring steel, and the castings are of refined malleable iron.
Write for Bulletin 11-B, Part 1.

No. 80 PILING CLAMP

Black's No. 80 Piling Clamp combines the piling idea with the versatility of the individual clamp. It is a double clamp with two screws running the full length, to which two sets of jaws are attached, one on each side of the frame. Available in regular and heavy capacities.
Write for Bulletin 11-B, Part 6.



MITER CLAMP

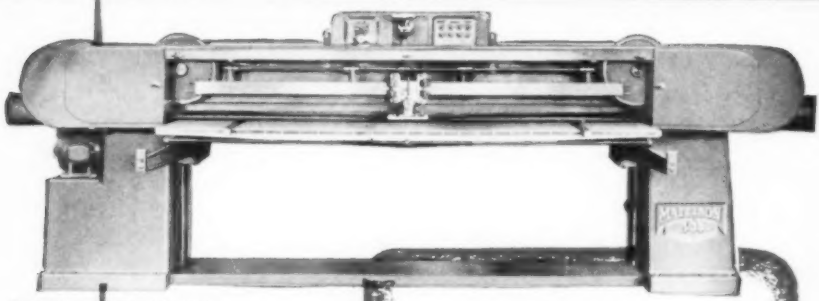
Black's Miter Clamp applies pressure by grasping the miter between a steel triangle and two mitered jaws, at right angles to the surfaces to be joined. Handle and screws are made of stiff high carbon steel.
Write for Bulletin 11-B, Part 3.

"If it's gluing equipment—we have it"

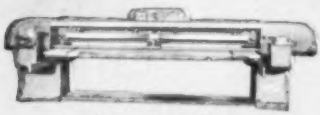
Write for details today!

THE BLACK BROTHERS CO., INC. **810 9th ST., MENDOTA, ILLINOIS**

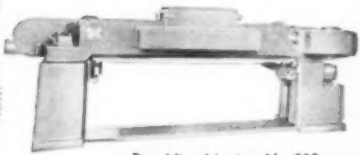
MATTISON'S NEW
No. 303 Automatic STROKE SANDER



Front View Mattison No. 303
Automatic Stroke Sander — Single Belt



Mattison No. 303
Automatic Stroke Sander — Double Belt



Rear View Mattison No. 303
Automatic Stroke Sander Single Belt

● The Mattison No. 303 Automatic Stroke Sander is the last word in modern engineering. From the standpoint of design — construction — smoothness of operation and appearance, it is in a class by itself. Results that can be expected are faster output, better quality of work, and trouble free operation. These important features are all to your advantage. Hydraulic system for operation of shoe is simple yet positive in action, providing smooth operation of sanding shoe the entire length of stroke. Belt speeds to meet your needs. All controls are within easy reach of operator. The sand belt is completely enclosed at top and both ends for dust control and safety. Belts are easily and quickly changed. Aluminum sanding shoe is mounted on ball bearings for easy operation and control. Massive base and column construction provide solid foundation. The Mattison No .303 Automatic Stroke Sander is recommended as the most efficient method for finish sanding large, flat surfaces such as tops, panels, doors, etc. It provides perfect work on a real production basis. Double-belt model with coarse belt for removing tape and glue, and fine belt for finish sanding, speeds up production by reducing handling time and, in many cases, eliminates drum sander operation.

Send for complete information on the 303, the latest in stroke sanders.

MATTISON MACHINE WORKS

ROCKFORD • ILLINOIS